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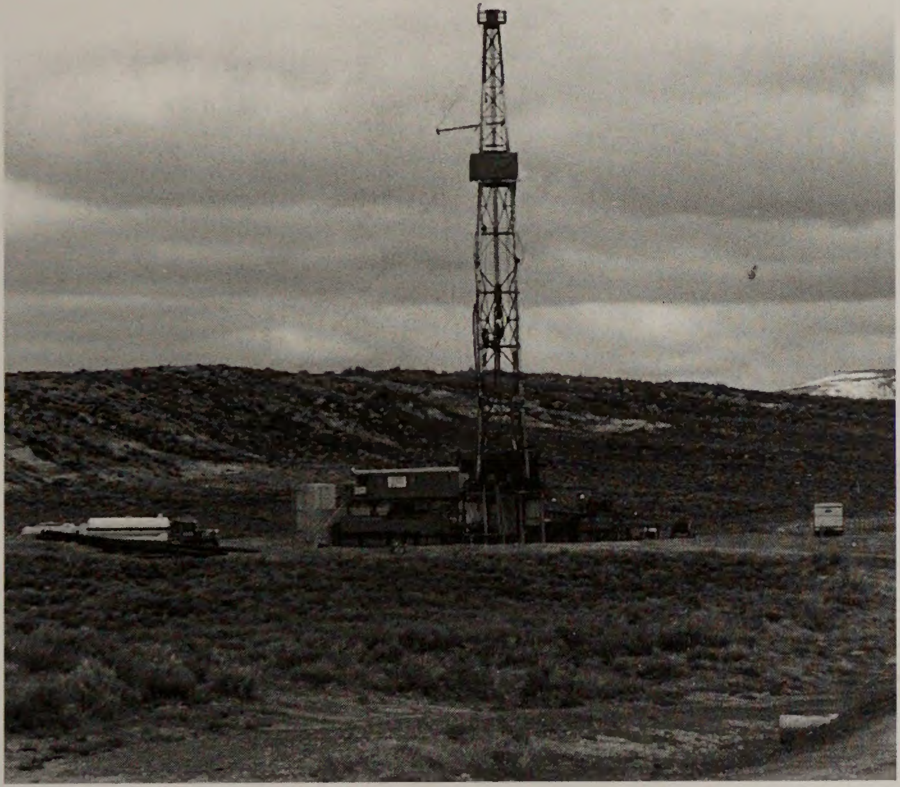
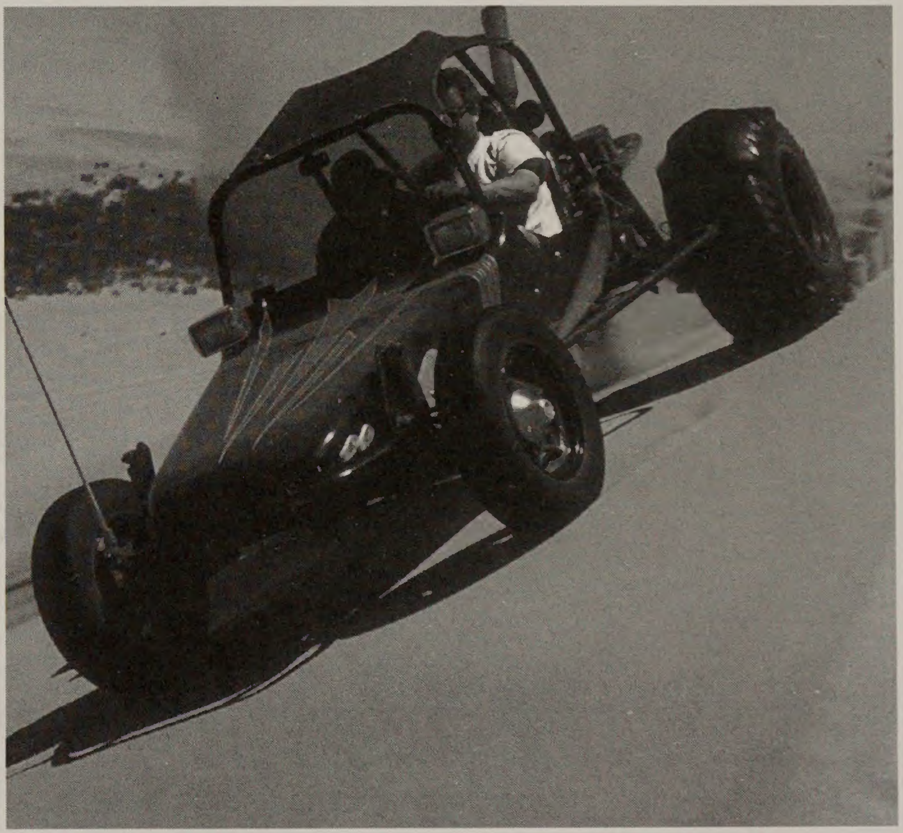
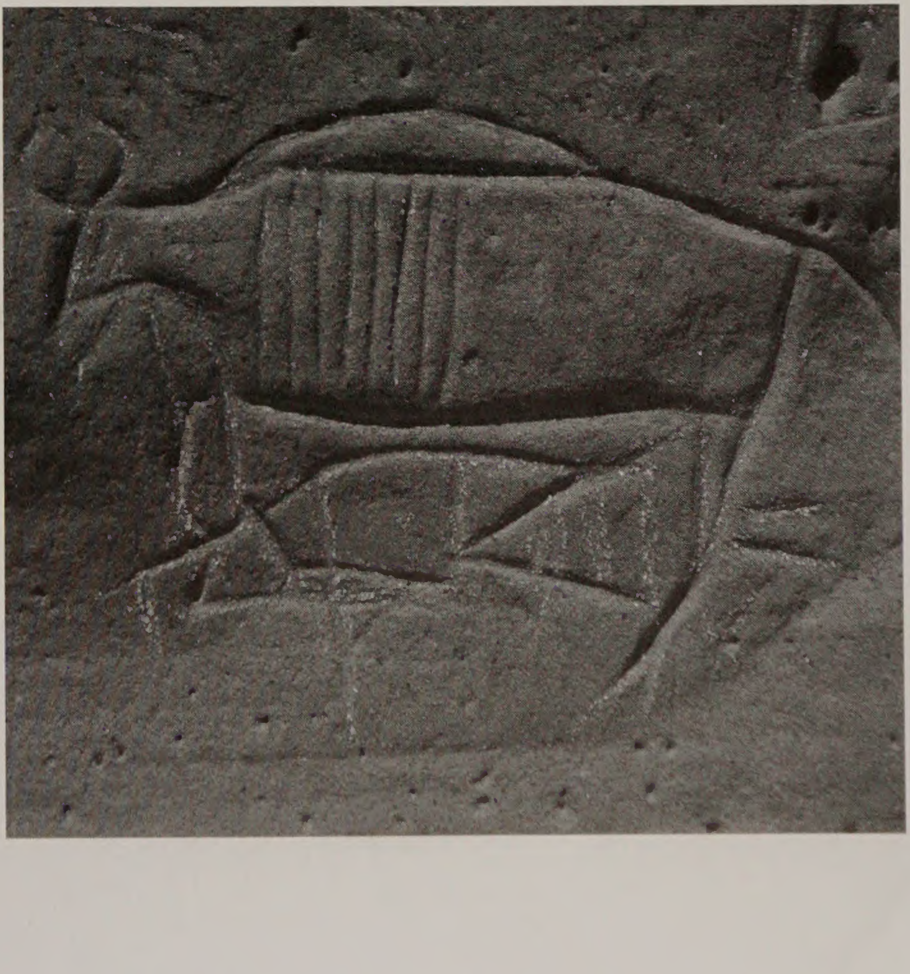
Rock Springs Field Office July 2004

FINAL
Environmental Impact Statement for the Jack Morrow Hills Coordinated Activity Plan/Proposed Green River Resource Management Plan Amendment

Volume 1 of 2







MISSION STATEMENT

It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

BLM/WY/PL-04/019+1610

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Wyoming State Office
P.O. Box 1828
Cheyenne, Wyoming 82003-1828

In Reply Refer To:
1610 (930)
Jack Morrow Hills CAP

June 22, 2004

Dear Reader:

Attached for your review is the final Environmental Impact Statement (EIS) for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP). This document presents the Proposed JMH CAP for managing the BLM-administered public lands and resources in the planning area. The JMH CAP planning area includes approximately 574,800 acres of Bureau of Land Management (BLM) administered public land surface and mineral estate in Sweetwater, Fremont, and Sublette Counties, Wyoming. The Proposed JMH CAP is a refinement of the preferred alternative presented in the supplemental draft EIS published in February 2003.

Parts of the Proposed JMH CAP that would amend the Green River Resource Management Plan (RMP) may be protested by parties who participated in the planning process and who have an interest that is, or might be, adversely affected by the approval of the decisions that amend the Green River RMP (43 CFR 1610.5-2). Management actions that may be protested are indicated in underlined italics in Chapter 2, Section 2.7, and in Table 2-1 under the Proposed JMH CAP.

Examples of those Proposed JMH CAP decisions that would amend the Green River RMP include--

- New withdrawals from mineral location;
- New or expanded special management area and ACEC designations;
- Modified visual resource management designations;
- Modified off-road (highway) vehicle designations;
- New and modified mineral leasing, mineral sales, and mineral location decisions;
- New and modified right-of-way avoidance and exclusion areas;
- New and modified protective measures for heritage resources;
- New and modified protective measures for wildlife habitats.

Protests sent by surface mail to:

U.S. Department of the Interior
Bureau of Land Management
Director (210)
Attn: Ms. Brenda Williams
Protest Coordinator
P.O. Box 66538
Washington, DC. 20035

Protests sent overnight mail to:

U.S. Department of the Interior
Bureau of Land Management
Director (210)
Protest Coordinator (WO-210),
1620 L Street, NW, Room 1075
Washington, DC 20036

Protests must be postmarked within 30 days after the Environmental Protection Agency publishes the filing notice for this final EIS in the *Federal Register*. Protests must contain--

- The name, mailing address, telephone number, and interest of the person filing the protest;
- A statement of the issue or issues being protested;
- A statement of the part or parts of the plan being protested;
- A copy of all documents addressing the issue, or issues, that were submitted during the planning process by the protesting party, or an indication of the date the issue or issues were discussed for the record; and
- A concise statement explaining why the proposed management plan is believed to be wrong.

At the end of the 30-day protest period, the decisions in the Proposed JMH CAP that would amend the Green River RMP, excluding any portion under protest, will become final. Approval will be withheld on any portion of the plan under protest until final action on the protest has been completed. Any significant change made as a result of a protest will be made available for public review and comment before it is approved.

Freedom of Information Act Considerations: Public submissions for this planning effort, including names and street addresses of respondents, will be available for public review in their entirety, after the protest period closes, at the Rock Springs Field Office during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except Federal holidays. Individual respondents may request confidentiality. If a respondent wishes to withhold his or her name or address from public review or from disclosure under the Freedom of Information Act, the respondent must state this prominently at the beginning of the submission. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals or officials representing organizations or businesses, will be made available for public inspection in their entirety.

All other decisions in the Proposed JMH CAP are activity- or implementation-level planning decisions and, because they are not implemented by approval of the JMH CAP, they are not subject to protest. Such decisions will be appealable at some future date when they are proposed for on-the-ground implementation. Examples of proposed implementation-level decisions include placing of salt blocks 500 feet from streams and location of interpretive and directional signs.

Thank you for your participation in this planning effort.

Sincerely,

Robert A. Bennett

Robert A. Bennett
State Director

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ID: 88058359

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FINAL
Environmental Impact Statement
for the
Jack Morrow Hills
Coordinated Activity Plan/Proposed Green River Resource Management Plan Amendment
for
Public Lands Administered
by the
Bureau of Land Management
Rock Springs Field Office
Rock Springs, Wyoming

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Prepared by

United States Department of the Interior
Bureau of Land Management
Rock Springs Field Office

In cooperation with

The State of Wyoming (including Sublette County,
Popo Agie Conservation District, Sublette County Conservation District,
and Sweetwater County Conservation District)
Fremont County
Sweetwater County

June 2004

FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE JACK MORROW HILLS COORDINATED ACTIVITY PLAN ROCK SPRINGS, WYOMING

Lead Agency: U.S. Department of the Interior, Bureau of Land Management

Type of Action: Administrative

Jurisdiction: Portions of Sweetwater, Fremont, and Sublette Counties

Abstract: This final environmental impact statement (EIS) addresses alternative coordinated activity plans (CAP) for the Jack Morrow Hills (JMH) planning area. When completed, the JMH CAP will provide more specific management direction to prevent or address conflicts among potential development of energy resources, recreational activities and facilities, and wildlife and wildlife habitat and provide more specific management direction for other land and resource uses in the planning area, including livestock grazing, important wildlife habitat, and other important resources. The planning area comprises approximately 574,800 acres of federal land and federal mineral estate in southwestern Wyoming. This final EIS contains five alternative coordinated activity plans, including a Proposed JMH CAP, that provide management direction for the protection of certain resources (e.g., desert elk and other big game habitat, unique sand dune–mountain shrub habitat, unstabilized and stabilized sand dunes, cultural sites) and allow leasing and development of energy resources, recreational activities, grazing practices, and other activities at varying levels.

When the JMH CAP planning effort is completed, it will provide an integrated multiple use activity plan for a balanced level of resource uses and provide protection for sensitive and important resource values on the Bureau of Land Management (BLM)-administered public lands in the area. The fluid minerals leasing decisions and locatable mineral decisions for the JMH CAP planning area, which were deferred in the Green River Resource Management Plan (RMP), will be determined in the JMH CAP, which will result in amendment of the Green River RMP. Other management prescriptions resulting from this planning effort include some refinement of designations of roads for use, grazing practices, surface disturbance practices, cultural resource management prescriptions, recreational activities and facilities, identification of right-of-way windows and concentration areas, and prescriptions for managing wildlife habitat. Determining some of these prescriptions might also result in amendment of the Green River RMP.

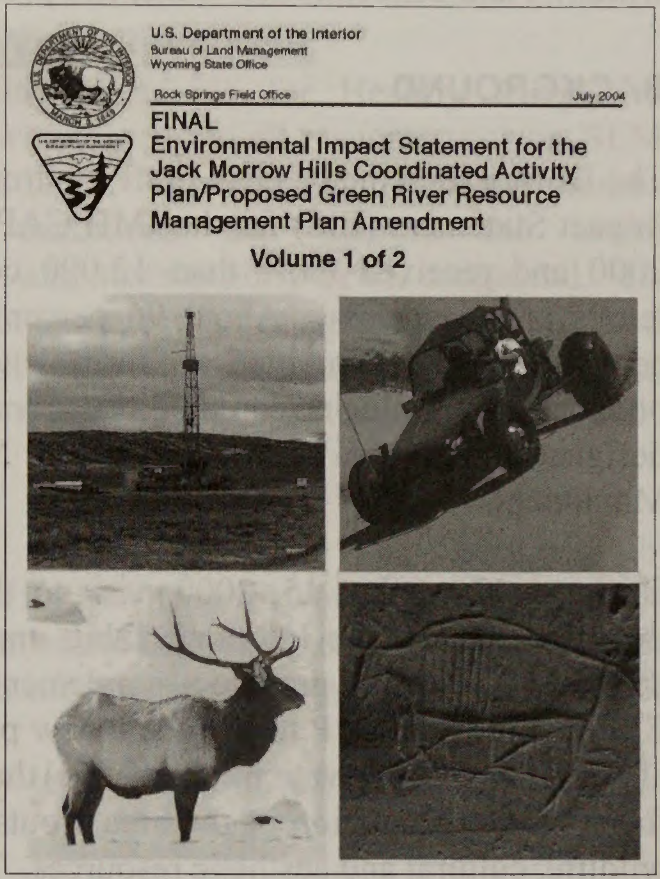
Five alternatives that address the issues in the JMH CAP planning area have been considered. They are continuation of present management (No Action Alternative) and four other alternatives, including a Proposed JMH CAP, that provide a variety of management choices ranging from restricting management actions or development to actively mitigating the effects of resource management actions or development. The Proposed JMH CAP is, in part, a combination of the No Action Alternative and Alternatives 1, 2, and 3. The five alternatives presented in Chapter 2 of the final EIS focus on allocating public lands and resources among the uses and prescribing the general management actions that would be taken. The various impacts that would be expected from implementing each of the alternatives are documented in Chapter 4.

When the JMH CAP is completed, it will provide a comprehensive framework for managing the BLM-administered public lands and resources and allocating their uses in the planning area. Further information regarding this final EIS can be obtained from the address below. Protests will be accepted for 30 days following the date that the Environmental Protection Agency publishes the notice of filing for this final EIS in the *Federal Register*. Protests should be mailed to:

U.S. Department of the Interior, Bureau of Land Management, Director (210)
Attn: Ms. Brenda Williams, Protest Coordinator
P.O. Box 66538
Washington, DC 20035

SUMMARY

INTRODUCTION



U.S. Department of the Interior
Bureau of Land Management
Wyoming State Office
Rock Springs Field Office July 2004

FINAL
Environmental Impact Statement for the Jack Morrow Hills Coordinated Activity Plan/Proposed Green River Resource Management Plan Amendment

Volume 1 of 2

This final environmental impact statement (EIS) and coordinated activity plan (CAP) will provide more specific management direction to address potential conflicts among development of energy resources, recreational activities and facilities, and land uses in the Jack Morrow Hills Coordinated Activity Plan (JMH CAP) planning area (Map 1). The planning area encompasses about 622,430 acres of federal, state, and private land in southwest Wyoming. Approximately 574,800 acres of public land surface and federal mineral estate are administered by the Bureau of Land Management (BLM) through its Rock Springs Field Office (RSFO) in Rock Springs, Wyoming. The JMH CAP planning area includes the Steamboat Mountain, Greater Sand Dunes, White Mountain Petroglyphs, and Oregon Buttes Areas of Critical Environmental Concern (ACEC); a portion of the South Pass Historic Landscape ACEC; the Oregon Buttes, Honeycomb Buttes, Greater Sand Dunes, Buffalo Hump, Whitehorse Creek, South Pinnacles, and Alkali Draw Wilderness Study Areas (WSA); and three special recreation management areas (Greater Sand Dunes; Continental Divide National Scenic Trail; and the Oregon, Mormon Pioneer, Pony Express, and California National Historic Trails). Parts of Fremont, Sweetwater, and Sublette Counties in southwest Wyoming are within the planning area.

Special Management Areas	Approximate Acres*
Wilderness Study Areas	119,000
ACECs & SRMAs	147,000

*These areas may overlap and acreages do not total. See Table 3-1.

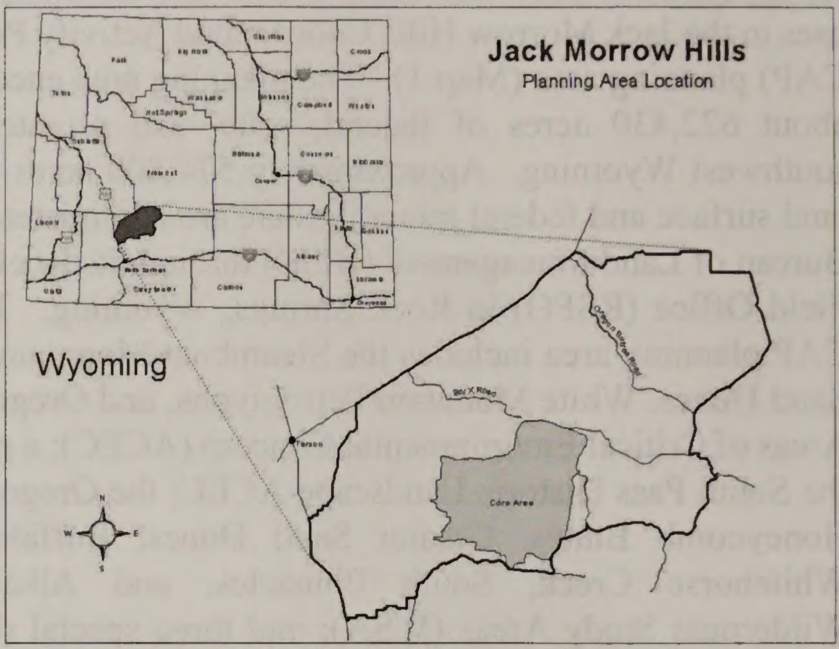
When completed, the JMH CAP will provide a framework for managing BLM-administered public lands and resources and for allocating uses in the planning area. Specifically, this CAP is focused on resolving four resource management issues: minerals resource management and related rights-of-way; resource uses affecting vegetation, soils, air, watershed, and wildlife values; recreation and heritage resources management; and special management areas. It is anticipated that the JMH CAP will be implemented over a 20-year planning period.

The JMH CAP will make land and resource management decisions for fluid mineral leasing and mineral location. Because of concerns raised by the public and BLM regarding these decisions during preparation of the Green River Resource Management Plan (RMP) in 1997, the decisions were deferred to the JMH CAP. Concerns in 1997 included the need for more site specific and detailed information and analysis. Thus, this effort will make the Green River RMP fluid minerals leasing decisions (and modify some existing decisions) and mineral location decisions for the JMH CAP planning area and will determine the appropriate levels and timing of leasing and development of energy resources, while sustaining the other important land and resource uses in the area. The deferred Green River RMP decisions will result in amendment of the Green River RMP. Other management prescriptions resulting from this planning effort include some refinement of road use designations, grazing practices, recreational activities and facilities, identification of right-of-way windows and concentration areas, and prescriptions for managing wildlife habitat.

BACKGROUND

The BLM issued the original draft Environmental Impact Statement (EIS) for the JMH CAP in July 2000 and received more than 12,000 comment letters and postcards. About 96 percent of the comments were submitted as form letters and postcards advocating no commodity use and formal designation of the entire area as a National Monument.

During a November 15, 2000, visit to the area, then-Secretary of the Interior Babbitt announced that the BLM would prepare a supplemental draft EIS for the JMH CAP to include a new preferred alternative (a "conservation" alternative) that would focus on the protection of the area's outstanding wildlife, cultural and aesthetic resources. The BLM prepared the supplemental draft EIS and released it for public comment on February 23, 2003. The comment period closed on May 23, 2003. More than 69,000 comments were received.



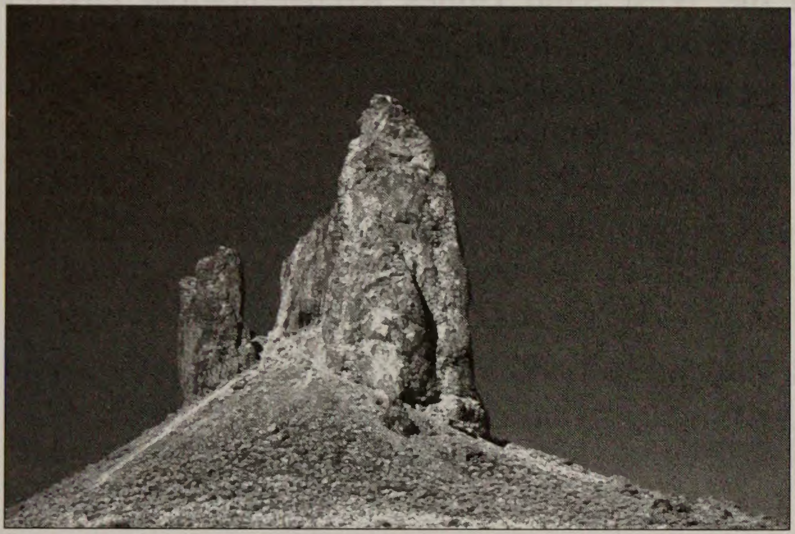
ISSUES AND CONFLICTS

The identified issues are based upon the demands, concerns, conflicts, or problems involving the use or management of the public lands and resources in the JMH planning area. The planning issues were identified through the scoping process and other public outreach efforts. Planning issues and conflicts between various resources and activities include:

- Mineral development (i.e., oil/gas, coalbed methane, coal, diamonds, and gold) and big game (i.e., moose, elk, deer, antelope) crucial habitat (crucial winter range and birthing areas), and other important wildlife species (e.g., plovers, sage-grouse, raptors)
- Visitor health and safety and mineral development (i.e., ORV recreation area and oil/gas development)
- Recreation activities and big game crucial habitat
- Livestock grazing/range projects and big game habitat (especially in elk parturition areas)
- Linear rights-of-way and other land use authorizations and big game crucial habitat
- Surface disturbance, visual and noise intrusions, and cultural sites and Native American Respected Places.

OVERVIEW OF PROPOSED PLAN

Key points of the Proposed Plan are listed below. Management of resources such as air quality are included in the Green River RMP and referenced in the CAP, but not specifically listed here.



Land and Water Resources

The Wyoming Standards for Healthy Rangelands (standards) would apply to all resource uses on BLM-administered lands. These standards are the minimal acceptable conditions that address the health, productivity, and sustainability of the rangeland. The standards would direct the management of public lands and would focus the implementation of this activity plan toward the maintenance or attainment of healthy rangelands.

Vegetation treatments would be designed by interdisciplinary teams on a case-by-case basis. Appropriate rest for treated areas would be provided (up to one year prior to treatment, and 24 months after treatment unless an onsite analysis determines this time frame should be more or less). Native vegetation would be managed to allow native plant succession to continue.

A monitoring plan would be developed by an interdisciplinary team and adjustments made based upon monitoring information.

Wild Horses

The current appropriate management level (AML) and wild horse herd management area boundary would remain unchanged from the Green River RMP (1997).

Livestock Grazing

Current preference for livestock grazing AUMs would remain unchanged. Appropriate actions would be applied to meet rangeland health standards.

Wildlife Management

The proposed plan would require appropriate mitigation for protection of wildlife habitat such as seasonal restrictions, avoidance and no surface occupancy. Key habitats include crucial winter ranges, birthing areas, migratory corridors, sage grouse strutting grounds, nesting and winter concentration areas, and mountain plover nesting habitat. Management of T&E species would continue to be done in consultation with USFWS. A Biological Assessment (BA) is being developed for submission to the USFWS. The USFWS has participated in the development of the BA.

The Proposed Plan would implement recent BLM management direction regarding greater sage-grouse habitat. The CAP is consistent with the recent "Wyoming Greater Sage-Grouse Conservation Plan" which was developed by the Wyoming Game and Fish Department with a broad range of stakeholders. The JMH CAP proposes to maintain and enhance sage-grouse habitat through an implementation, monitoring, and evaluation approach.

Heritage Resources

Consultation would continue with tribal leaders for activities proposed around respected places. The BLM would conduct research and mapping of the Indian Gap Trail and develop an interpretation strategy in consultation with the tribes.

The Paleosol Deposition area would be designated as the West Sand Dunes Archaeological District Management Area. The proposed management strategy would provide for multiple-use activities with appropriate inventory, testing, and evaluation to define impacts and site-specific mitigation.

National Register of Historic Places (NRHP) sites would be protected from surface disturbing activities. Other historic properties would be protected through mitigation, including distance and site restrictions.

Travel Management, Access, and Realty

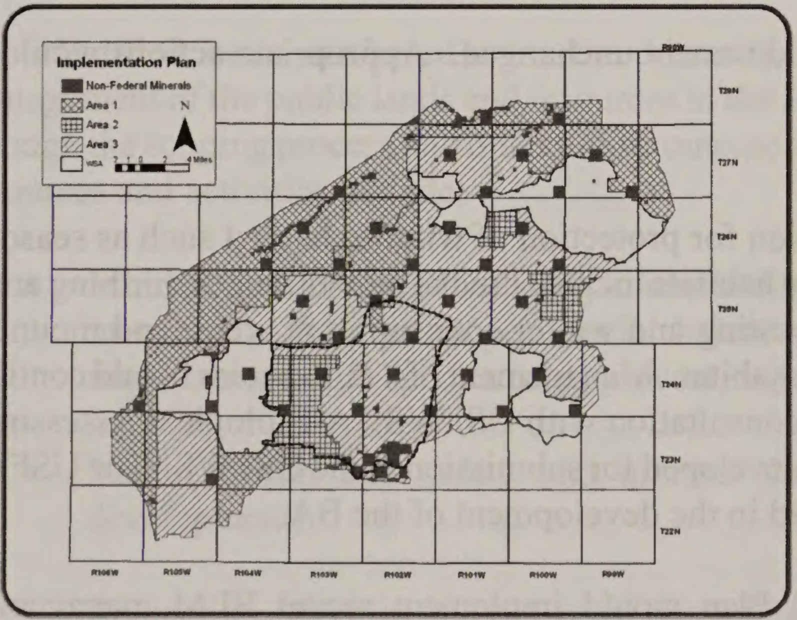
A transportation plan specific to the JMH area would be developed with interested parties. Emphasis would be placed on providing access while ensuring watershed health and protection of crucial wildlife habitats and sensitive resources.

OHV designations for open and closed areas and areas limited to existing or designated roads and trails are identified. Seasonal closures would continue. Rights-of-way placement would coincide with transportation planning.

Recreation Resources

Recreation resources would be managed to provide for a wide diversity of recreation opportunities. Project plans would be developed for backcountry byways, Sand Dunes ORV recreation site, Crookston Ranch Historic Site, Boars Tusk, Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, National Historic Trails, White Mountain Petroglyphs, and Native American sites including Indian Gap.

Minerals and Oil and Gas Leasing



Valid existing lease rights would be recognized. Lease suspensions on existing oil and gas leases would be lifted 3 years from the signing of the ROD or upon approval of a plan of operation, whichever occurs first. The planning area would be divided into three areas (see attached map). Area One would be open to oil and gas leasing. Area Two would be open to leasing, but BLM may require potential lessees to share data (such as reservoir data or geologic data) or plans related to the development of the potential oil and gas resource prior to leasing. Permits (e.g., APDs) within this area would be considered on a case-by-case basis, with appropriate NEPA analysis and conditions of approval. However, additional conditions of approval designed to protect sensitive resources would be likely within this area. Area Three would have limited areas open to leasing with NSO stipulations; the remaining areas would be administratively closed to new leasing. Applications for activities on existing leases (e.g., APDs) within Area Three would be considered on a case-by-case basis with appropriate NEPA analysis and conditions of approval. However, additional mitigation to protect sensitive resources would be likely within this area. To the extent that laws and regulations allow, those portions of Area 3 that are closed to oil and gas leasing will remain closed to leasing of oil and gas unless BLM determines that an NSO lease is appropriate and meets management objectives. For example, an NSO lease may be offered if production on adjacent private or state lands results in a loss of federal minerals through drainage or is necessary to protect correlative rights. At this time it is not anticipated that an NSO lease for these lands would extend further than one-half mile from the boundary of the involved private or state lease. However, this may change as new information and technological advances become available.

Salable Minerals

Sensitive resources would be protected through avoidance or mitigation. Mineral materials activity would occur in conjunction with development activity, if needed.

Locatable Minerals

Two elk calving areas and a part of the Steamboat Mountain ACEC would be withdrawn from locatable mineral entry, in addition to the withdrawals identified in the GRRMP.

VRM

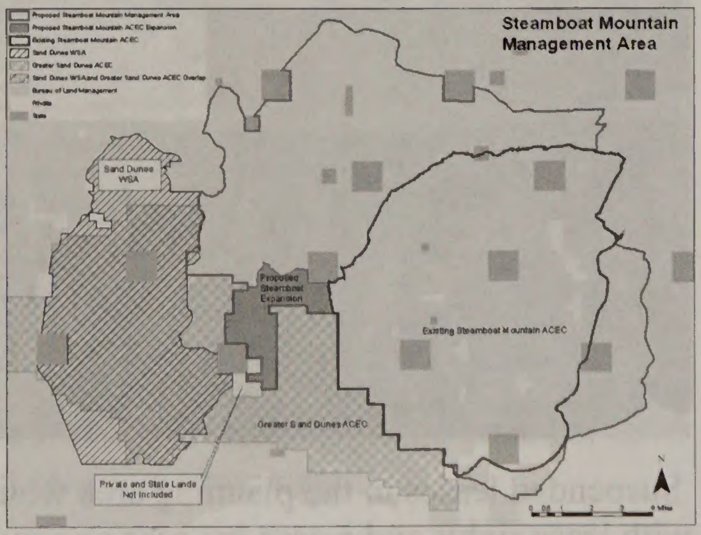
Visual Resource Management would maintain or improve scenic value by managing impacts and intrusions through mitigation.

Special Management Areas

Four of the existing five ACEC designations would remain unchanged. The fifth, Steamboat Mountain ACEC, would be expanded to include the Indian Gap historic trail and key habitats with the rare sagebrush/scurfpea vegetation type. The combined resource values in the expanded area contain relevant and important values consistent with those in the existing ACEC area.

The West Sand Dunes Archaeological District would be established as a new management area to protect important scientific values involving the earliest stages of human occupation of North America (7,000 to 12,000 years ago). Management objectives would include education and interpretation opportunities while still allowing development of natural gas and other resources that occur in the area.

The Steamboat Mountain Management area would be established to improve management of important Native American cultural values, important watershed values, unique wildlife habitat features and crucial and overlapping big game habitat. The management area would include the existing Steamboat Mountain ACEC and the proposed ACEC expansion area. This management area proposal is based on concerns and recommendations expressed by the public and Governor of Wyoming during the 90-day comment period; new information from the ongoing elk study in the JMH CAP area; input from the Wyoming Game and Fish Department; and increased awareness and involvement of the Native American community and the significance of their concerns for Native American respected places in the area. Management objectives include: 1) Enhancing and maintaining the water quality, vegetation, soil, and wildlife resources to ensure biological diversity and a healthy ecosystem; 2) Maintaining the unique diverse habitats (big sagebrush, aspen, limber pine, and mountain shrub communities) in the Steamboat Mountain area, especially on stabilized sand dunes along Steamboat Rim, Indian Gap, and in the Johnson, Lafonte, and Box Canyon areas; 3) Providing suitable habitat to maintain the continued existence of the Steamboat elk herd and other big game populations; and 4) Protecting important heritage resources (cultural, historic, archaeological, and unique geological features) while allowing for educational research and appropriate interpretive uses.


Proposed Steamboat Mountain Management Area
Proposed Steamboat Mountain ACEC Expansion
Existing Steamboat Mountain ACEC
Sand Dunes WSA
Greater Sand Dunes ACEC
Sand Dunes WSA and Greater Sand Dunes ACEC Overlap
Bureau of Land Management
Private
State
Steamboat Mountain Management Area
Sand Dunes WSA
Proposed Steamboat Expansion
Existing Steamboat Mountain ACEC
Greater Sand Dunes ACEC
Private and State Lands Not Included
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Wilderness

Updates on wilderness information are provided in the final EIS in conformance with the Department's policy on wilderness and recent Bureau guidance. Two alternatives in the supplemental draft EIS that addressed WSAs were modified in the final EIS to reflect the new guidance. The final EIS incorporates a discussion regarding the removal of the WSA reference in those two alternatives. The planning area includes 7 existing WSAs (about 119,000 acres). These WSAs would continue to be managed in accordance with the "Interim Management Policy and Guidelines for Lands Under Wilderness Review" until Congress acts on designation.

Implementation Strategy Management

The final proposed Bureau of Land Management (BLM) management direction is based on the review of public comments and incorporation of new information. The reformulated implementation strategy for the JMH CAP planning area includes many of the same principles of adaptive management contained in the draft document, but applies a more traditional monitoring and adjustment approach. The approach to timing and sequencing of all activities in the JMH CAP has been modified to recognize valid existing rights of existing oil and gas leases. The BLM maintains its commitment to monitoring, adjusting to changes, and participation and communication including establishment of a JMH CAP working group.

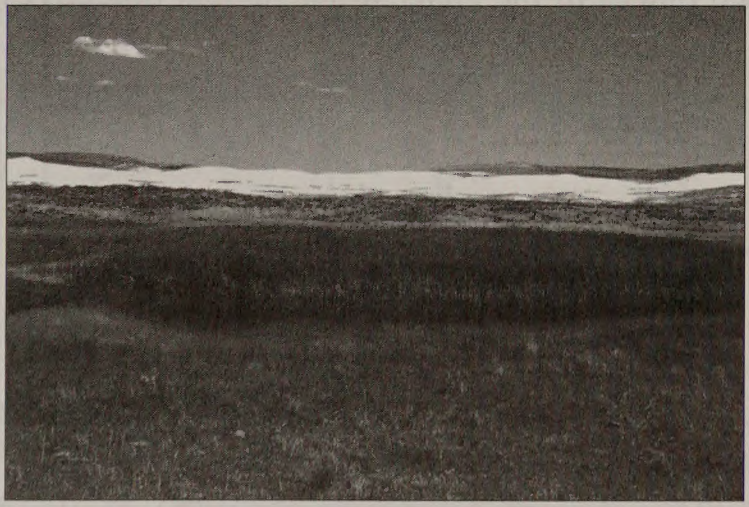
GENERAL DESCRIPTION OF THE FINAL EIS ALTERNATIVES

Five alternatives are analyzed in detail, all of them multiple-use oriented. Each alternative provides for resource production and environmental protection. The management prescriptions of the five alternatives are described in Chapter 2 and are summarized and compared in Table 2-1, Summary Comparison of Alternatives (found at the end of Chapter 2).

Alternatives developed for this analysis were formulated to address the full range of management actions that could be implemented for the planning area, including: a No Action Alternative; the Proposed JMH CAP; and, three additional alternatives. The previous planning actions and the alternatives developed for the Green River RMP and the original draft EIS for the JMH CAP were reviewed along with consideration of management and resource issues identified by BLM technical staff in the RSFO. New information regarding the resources in the planning area obtained since the preparation of the original draft EIS was considered in the development of alternatives, along with public comments and input from cooperating agencies and users of the lands and resources in the JMH CAP planning area.

No Action Alternative

The No Action Alternative is defined as the continuation of present management. Ongoing programs initiated under existing legislation and regulations and the Green River RMP would continue, even as new plans are developed or new planning efforts are conducted within the RMP area. Thus, this alternative describes the current resource and land management direction for the JMH CAP planning area, represented by the decisions set forth in the Green River RMP (October 1997) which provides for multiple-use management of public lands and resources to meet foreseeable needs. The No Action Alternative recognizes valid existing rights. No additional lands would be considered for leasing for fluid minerals in what is known as the "core" area, and there would not be any changes proposed for ACECs. The No Action Alternative is the baseline to which the other alternatives are compared. Suspended leases in the planning area would be reinstated. Existing leases could be developed consistent with lease rights and a case-by-case review with appropriate mitigation as needed.



Alternative 1 (Development)

Alternative 1 provides for expanded opportunities to use and develop the planning area. Resources would be protected to the extent required by applicable laws and regulations. Alternative 1 would authorize new leases and permits for oil, gas, and mineral development throughout the planning area consistent with existing regulatory requirements and statutory withdrawals and closures. Additional lands would be considered for fluid mineral leasing in the core area. There would be no changes proposed for ACECs. This alternative could result in modifications or amendments to previous land management decisions represented by the 1997 Green River RMP decisions.

Alternative 2 (Preservation)

Alternative 2 reduces opportunities to use and develop the planning area from the No Action Alternative. This alternative emphasizes improving and protecting habitat for wildlife and sensitive plant and animal species; improving riparian areas and water quality; and protecting historic, cultural, and Native American sites. Boundaries of existing ACECs would be expanded as necessary to protect sensitive resources, and Research Natural Area designations would be pursued as appropriate. Two new ACECs would be designated. Additional lands would not be considered for fluid mineral leasing in the core area. Alternative 2 would not allow development in areas with competing resource uses and would close or designate portions of the planning area to restrict some land uses. Development or activities could occur in specified portions of the planning area, with appropriate mitigation measures.

Alternative 3 (Conservation)

Alternative 3 provides opportunities to use and develop the planning area while ensuring resource protection. This alternative would allow development and activities to occur throughout the planning area provided that sensitive resources were protected and mitigation requirements were met. Mitigation requirements necessary to ensure the stability of the sensitive resource indicators would be determined through an adaptive management approach to resource use and protection. Additional lands would be considered for fluid mineral leasing in the core area. Boundaries of existing ACECs would be expanded as necessary to protect sensitive resources.

Proposed Plan

The BLM's Proposed JMH CAP provides opportunities to use and develop the planning area by providing a balance of uses. The Proposed Plan comprises a complementary mix of appropriate elements from each alternative; however, the Proposed JMH CAP also contains management actions not included in any of the other alternatives. As part of the implementation, monitoring and evaluation management strategy (Appendix 17), portions of the planning area would be available for development and other activities, with appropriate mitigation. Some portions of the planning area would be unavailable to new fluid mineral leasing consideration. An implementation strategy would be initiated, and monitoring and evaluation of activities would occur. The strategy provides for adjusting to change, and for further public participation and establishment of a JMH CAP working group. Boundaries of one existing ACEC would be expanded in order to better protect sensitive resources.

Environmental Consequences

The environmental consequences that could result from the management prescriptions of the five alternatives are described in Chapter 4 and are summarized and compared in Table 2-4, Summary of Impacts. These potential consequences are discussed for each resource program, providing an analysis of environmental effects resulting from management of all resources and resource uses. This includes an analysis of cumulative effects, which are defined as the impacts that result from the incremental impact of an action when added to other past, present, or reasonably foreseeable future actions.

COOPERATING AGENCY SUMMARY

The State of Wyoming was granted Cooperating Agency status along with Sublette County and three Conservation Districts under the State's umbrella status. Fremont County and later Sweetwater County were granted individual Cooperating Agency status. During this project, the BLM and cooperating agencies have participated in more than 20 joint meetings and work sessions, public informational and scoping meetings, and public hearings. The cooperators reviewed the preliminary final EIS concurrently with BLM. Their comments have been incorporated into the final EIS.

COORDINATION WITH NATIVE AMERICANS

Coordination with Tribes has been ongoing throughout the planning process. Several letters were sent as part of the consultation process with Native American tribal councils asking them to identify places of concern, and requesting contact information for any other people with whom the BLM should consult concerning sacred sites or other places of concern. The BLM followed up with a series of telephone calls to tribal councils. BLM and Native Americans also participated in numerous field trips, meetings, school visits, and presentations. This level of coordination is anticipated to continue as implementation of the JMH CAP occurs.

PUBLIC INVOLVEMENT

Over 40 public meetings, open houses, field tours, and hearings have been held. Additionally, information has been provided through the JMH CAP website, news releases, and newsletters. Interviews with numerous media have also been conducted. Prior to the release of the supplemental draft EIS in February of 2003, several open houses and scoping meetings were held. Additional meetings on preliminary alternatives occurred providing public input into the alternative formulation process. Following the release of the supplemental draft EIS, two hearings and two open houses were held, along with media outreach and interviews. More than 69,000 comments (mostly as form letters) were received during the 90-day comment period. Key issues raised in the comment period included: wilderness policy change; Native American consultation; Citizen's Wildlife and Wildlands Alternative evaluation; cumulative effects analysis; lack of baseline data on select resources (e.g., water, wildlife, cultural); consultation with USFWS regarding Biological Assessment; and justification and effective implementation of adaptive management plan. The comments have been addressed and responded to in the development of the final EIS. Once published, the final EIS will be subject to a 30-day protest period.

MODIFICATIONS IN THE FINAL EIS

The modifications in the final EIS are a result of public comment, incorporation of new information, internal review, and changes in management direction and policy. The Proposed JMH CAP is essentially a modification of the Preferred Alternative presented in the supplemental draft EIS. Modifications to the other alternatives were also made due to changes in policy and direction for WSAs and greater sage-grouse management.

The following are the areas for which modifications have occurred:

- Adaptive Management Strategy: Proposed changes in the Bureau of Land Management (BLM) management direction based on the review of public comments and the incorporation of new information has resulted in reformulation of the implementation strategy for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP) planning area. In light of the review, the adaptive management approach has been modified. A more traditional approach (in which many of the decisions are made up front and would require plan modification to change) has been adopted (Appendix 17).
- Cumulative Impact Analysis: Updated information relating to the cumulative impact analysis was included in the final EIS.
- Greater Sage-Grouse Management: Updated information and clarification regarding greater sage-grouse habitat were included in the final EIS. This led to consideration of the implementation of a management approach based on location of suitable habitat.
- Management of the Steamboat Mountain ACEC: The boundary of the ACEC would be modified to include the highest concentration and overlap of unique habitat features, natural systems, and cultural values.
- Designation of WSAs: Updated information and clarification regarding new direction for WSAs were included in the final EIS. As a result, the proposed designation of the Pinnacles WSA was not included in Alternatives 2 and 3 of the final EIS. However, the management actions for this area are still included in these alternatives.

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CHAPTER 1—PURPOSE AND NEED

This final environmental impact statement (EIS) documents the comprehensive analyses of alternatives for the management of public lands and resources administered by the Bureau of Land Management (BLM) in the Jack Morrow Hills (JMH) planning area of Wyoming. The Green River Resource Management Plan (RMP) was prepared in October 1997. Because of concerns raised by the public and BLM during the preparation of the Green River RMP over the many resource uses and conflicts within the JMH Coordinated Activity Plan (CAP) planning area, the Rock Springs BLM Field Office initiated the JMH CAP planning effort. BLM began preparing the JMH CAP in 1998. The original draft EIS for the CAP, issued in July 2000, resulted in a great deal of public reaction, controversy, and the submission of new resource information. Accordingly, completion of the project was delayed to evaluate public comments and new information and to await BLM Washington Office (WO) direction to proceed. The BLM WO directed Wyoming BLM to prepare a "supplemental" draft EIS for the JMH CAP and to complete the CAP planning effort. The supplemental draft EIS was issued in February 2003. To the extent possible, existing analyses and information used to prepare the original draft EIS and the supplemental draft EIS were updated and used in preparing this final EIS.

The JMH CAP will provide more specific management direction for important resource values and resource uses within the planning area and prevent or address conflicts among potential development of energy resources, recreational activities, and other resource uses. The CAP will also provide management direction for the protection of certain resources (e.g., desert elk and other big game habitat, unique sand dune-mountain shrub habitat, unstabilized-stabilized sand dunes) while allowing for recreational activities, leasing and development of mineral resources, livestock grazing, and other activities, at appropriate levels. It is anticipated that the JMH CAP will be implemented over a 20-year planning period.

1.1 DESCRIPTION OF THE PLANNING AREA

The general planning area for the JMH CAP includes the BLM-administered lands located north and east of Rock Springs, Wyoming, which include portions of Sweetwater, Sublette, and Fremont Counties in southwestern Wyoming (Map 1). The planning area encompasses the Steamboat Mountain, Greater Sand Dunes, White Mountain Petroglyphs, and Oregon Buttes Areas of Critical Environmental Concern (ACEC); a portion of the South Pass Historic Landscape ACEC; the Oregon Buttes, Honeycomb Buttes, Greater Sand Dunes, Buffalo Hump, Whitehorse Creek, South Pinnacles, and Alkali Draw Wilderness Study Areas (WSA); and three special recreation management areas (SRMA): Greater Sand Dunes; Continental Peak Side Trail; and the Oregon, Mormon Pioneer, Pony Express, and California National Historic Trails (Map 2).

As provided by the Federal Land Policy and Management Act (FLPMA), the BLM has the responsibility to plan for and manage "public lands." As defined by the act, "public lands" are those federally owned lands, and any interest in lands (e.g., federally owned mineral estate), that are administered by the Secretary of Interior, through the BLM. Within the planning area, there are varied and intermingled land surface ownerships and varied, intermingled, and overlapping mineral ownerships. Therefore the administrative jurisdictions for land use planning and for managing the land surface and minerals are also varied, intermingled, and overlapping.

Because of this situation, the completed JMH CAP will not include planning and management decisions for lands or minerals that are owned by private individuals, the State of Wyoming, or local governments. Providing direction for the surface or minerals management of these lands is not within BLM's jurisdiction. In addition, RMP decisions will not be made for those federally owned minerals within the planning area that underlie federally owned land surface administered by other federal agencies. Table 1-1 describes land and mineral ownership and interrelated administrative jurisdictions in the planning area (Maps 3 and 4).

1.2 INTERRELATIONSHIPS WITH THE GREEN RIVER RMP

The Green River RMP deferred some minerals management decisions in a "core" area involving the eastern portion of the Greater Sand Dunes ACEC (not including any parts of the Buffalo Hump or Sand Dunes WSAs), the entire Steamboat Mountain ACEC, and the area of overlapping crucial big game habitats surrounding and adjacent to the Greater Sand Dunes and Steamboat Mountain ACECs (Map 2). The core area encompasses approximately 90,000 acres. The area to be addressed and analyzed for the JMH CAP includes about 622,000 acres surrounding and including the core area. This represents the planning area for the JMH CAP because management of the core area could affect lands and RMP decisions outside the core area and vice versa. The cumulative impact analysis area includes the planning area and areas beyond where actions and effects, both inside and outside the planning area, are interrelated.

The JMH CAP planning effort is an integrated activity planning effort directed toward specifying a balanced level of resource use and resource protection for the BLM-administered public lands in the CAP planning area. The Green River RMP planning decisions for leasing and developing fluid minerals in a portion of the JMH CAP planning area were not ready for inclusion in the Green River RMP. The Green River RMP planning decisions for mineral location in a portion of the JMH CAP area also were not ready for inclusion in the Green River RMP. These decisions were deferred for determination in the JMH CAP development effort. Thus a primary objective of this CAP effort was to make these decisions. Other objectives of this planning effort include determining the appropriate levels and timing of mineral leasing and development and other energy sources while sustaining the other important land and resource uses in the planning area. These land use plan decisions will result in amending the Green River RMP. Other management decisions for the planning area resulting from this planning effort may include some refinement of designations of roads, grazing practices, recreational activities and facilities, identification of rights-of-way windows and concentration areas, and prescriptions for managing wildlife habitat. Some of these decisions may also result in amending the Green River RMP.

1.3 PURPOSE AND NEED FOR THE JMH CAP

This final EIS documents the analyses of the consequences of current and alternative management of land and resource uses in the planning area over an anticipated 20-year planning period. It provides the basis for developing decisions that resolve some of the resource and land use issues identified in the Green River RMP and also provides the basis for developing site-specific activity or implementation plans for the JMH CAP planning area, which may also result in amending the Green River RMP.

The Green River RMP deferred certain fluid mineral leasing decisions and some locatable mineral decisions until a CAP could be completed for the Jack Morrow Hills area. As stated in the record of decision (ROD) for the Green River RMP:

> "The fluid mineral leasing decisions and some locatable mineral decisions are deferred in a 'core' area, involving the eastern portion of the Greater Sand Dunes ACEC (not including any parts of the Buffalo Hump or Sand Dunes WSA because WSAs are closed to mineral leasing by Congressional mandate), the entire Steamboat Mountain ACEC, and the area of overlapping crucial big game habitats surrounding and adjacent to the Greater Sand Dunes and Steamboat Mountain ACECs (Map 2). Approximately 90,000 acres are involved with this 'core' area. Because more site-specific and detailed information is needed to make the fluid mineral and

locatable mineral decisions for the core area, these decisions will be deferred in this core area until a CAP covering the area is completed."

The ROD also provides direction that the purpose of the JMH CAP is to provide a comprehensive and environmentally adequate management framework that will allow some fluid mineral and locatable mineral activities to occur in the core area and other portions of the planning area in harmony with other important resource and land uses in the planning area. The objective of this activity planning effort is to determine the appropriate level and methods of all of the combined land and resource uses possible for the entire planning area, including the core, that are mutually compatible and that provide for the important resource concerns in the area, such as sustainability of crucial big game habitat, air and water quality, scenic quality, vegetative cover and soil stability, recreational activities, livestock grazing and range improvement activities, mineral development, and other important resource concerns. Management of resources for the entire JMH CAP area will be considered because the lands outside the core area could be adversely affected by the management of the core and vice versa.

1.4 BLM PLANNING PROCESS

The process for the development, approval, maintenance, and amendment or revision of RMPs was initiated under the authority of Section 202(f) of the FLPMA and Section 202(c) of the National Environmental Policy Act of 1969 (NEPA). The process is guided by BLM planning regulations in Title 43 of the Code of Federal Regulations, Part 1600 (43 CFR 1600) and the Council on Environmental Quality (CEQ) regulations in 40 CFR 1500.

The preplanning phase of the BLM planning process consists of (1) compiling and reviewing the current laws, regulations, policies, executive orders, and directives pertaining to the planning area and (2) developing any needed State Director's guidance specific to the planning effort and the planning area.

Development of the RMP represents the first of the two-tiered BLM planning process: the land use planning tier. As such, the RMP prescribes the allocation of and general future management direction for the resource and land uses of the BLM-administered public lands in the entire RMP planning area. In turn, the RMP guides the second tier of the planning process: the more site-specific activity or implementation planning tier and daily operations.

Activity or implementation planning extends the resource and land use decisions of the RMP into site-specific management decisions for smaller geographic units of public lands within the RMP planning area. Activity planning includes such elements as allotment management plans, habitat management plans, and interdisciplinary or coordinated activity plans issuing various land and resource use authorizations; identification of specific mitigation needs; and development and implementation of other similar plans and actions. The JMH CAP effort involves making decisions at both the RMP and the activity planning tiers (Tiers I and II) of the planning process because of the mineral development decisions that were deferred at the RMP level, the potential refinement of other management decisions in the planning area, and the needed site-specific management decisions for all other resource and land uses in the CAP area.

1.5 PLANNING ISSUES AND CRITERIA

1.5.1 Planning Issues

Planning issues are determined from demands, concerns, conflicts, or problems concerning the use or management of public lands and resources. They are usually expressed in terms of the effects that some land and resource uses have on other land and resource uses or resource values. The following planning issues have been identified through public scoping and information gathered in analyzing the existing management situation in the planning area. They are based on the input of BLM personnel and the public, and on interagency consultation.

Issue 1: Effects of Minerals Resource Management and Rights-of-Way

Special attention is needed to address mineral development (i.e., oil/gas [including coalbed gas], coal, diamonds, and gold) and related transportation network conflicts with other land and resource uses and values. Principal considerations include disruptive activities and human presence in elk, deer, and fisheries habitat; big game (i.e., moose, elk, deer, antelope) crucial habitat (crucial winter range and birthing areas); and other important wildlife species habitats (e.g., greater sage-grouse, plovers, raptors); and effects on recreation values, forage uses, air quality, sensitive vegetation types, and sensitive watersheds. Areas where surface disturbing activities (e.g., mineral exploration and development activities, right-of-way construction activities) are suitable, not suitable, or should be restricted need to be identified.

Issue 2: Effects of Land and Resource Uses on Vegetation, Soils, Air, and Watershed Values

There are conflicting demands for consumptive and nonconsumptive uses of the vegetation resources in the planning area. The basic problem is providing for resource values and nonconsumptive uses while allowing for consumptive uses. Resource values include maintenance of general vegetative cover, watershed protection, maintenance and enhancement of riparian areas, soil stabilization, maintenance and enhancement of wildlife habitat (particularly big game crucial winter range and habitat for candidate or threatened and endangered wildlife and vegetative species), and air quality protection. Consumptive uses include livestock grazing; off-highway vehicle (OHV) use; and vegetation removal by mineral development, right-of-way construction, and other surface disturbing activities.

Issue 3: Effects of Land and Resource Uses on Recreation and Cultural Resource Management

There are certain resources and areas that need protection, while others need to be considered for more public and recreational uses. OHV use can conflict with other land and resource uses and can cause damage to resources, including wildlife, watershed values, and other recreation values. Principal considerations include providing for suitable and sufficient recreation uses and facilities (both dispersed and commercial, and particularly in the Greater Sand Dunes Recreation Area), visual resource management direction, road designations (transportation planning), and management of cultural and historical resources (the need for protection of Native American-respected places is of particular concern). Providing for visitor health and safety in areas with mineral development (i.e., OHV recreation area and oil/gas development) is also a concern.

Issue 4: Designation and Management of Special Management Areas

There are unique areas or sensitive lands and resources in the planning area that meet the criteria for protection and management under special management designations. There are five areas designated as ACECs (Greater Sand Dunes, Steamboat Mountain, Oregon Buttes, White Mountain Petroglyphs, and a portion of the South Pass Historic Landscape) that contain unique resources requiring special management attention. There are three SMRAs—the Greater Sand Dunes; Continental Peak Side Trail; and the Oregon, Mormon Pioneer, Pony Express, and California National Historic Trails—that contain recreation values requiring special management attention. There are also concerns that special management area designations may result in too many restrictions on the use of public lands.

Some issues that directly or indirectly apply to the planning area were addressed in the Green River RMP planning effort. These issues were not addressed in the supplemental draft EIS for the CAP and thus will not be addressed in this final EIS.

1.5.2 Planning Criteria

Planning criteria are the conditions and guidelines or parameters for conducting the planning effort for preparing the JMH CAP draft and final EIS and for developing the approved CAP. The planning criteria serve the following purposes:

- Ensure that the planning effort is focused on the issues, follows and incorporates legal requirements, and addresses management of all public land resources and land uses in the planning area, and that plan preparation is accomplished efficiently.
- Identify the scope and parameters of the planning effort for the decision maker, the interdisciplinary planning team, and the public.
- Inform the public of what should and should not be expected from the completed JMH CAP. This includes identification of any planning issues that are not ready for decision making and that will be addressed only through subsequent activity or implementation planning efforts or in approving public land and resource use authorizations (e.g., livestock grazing allotment management plans, wildlife habitat management plans, other coordinated activity planning, watershed management plans, processing applications for permits for mineral exploration, rights-of-way, etc.).

Planning criteria are based on standards prescribed by laws and regulations; guidance provided by the BLM Wyoming State Director; the results of consultation and coordination with the public and with other agencies, governmental entities, and Indian tribes; analysis of information pertinent to the planning area; public input; and professional judgment. The general planning criteria described in Appendix 1 have been developed to help focus the preparation of planning and management alternatives and the analysis of their impacts, and to guide selection of the Proposed JMH CAP for the final EIS. Additional planning criteria may be identified as the planning process proceeds.

1.6 RELEVANT STATUTES, LIMITATIONS, AND GUIDELINES

The following provides a description of the authorities that apply to the selection and implementation of the management actions for the JMH CAP.

1.6.1 Environmental Policy

NEPA (42 U.S.C. 4321, et seq.) requires the preparation of EISs for federal projects that may have a significant effect on the environment. It requires systematic, interdisciplinary planning to ensure the integrated use of the natural and social sciences and the environmental design arts in making decisions about major federal actions that may have a significant effect on the environment. The procedures required under NEPA are implemented through the CEQ regulations at 40 CFR 1500.

The Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. 1531, et seq.), directs federal agencies to ensure that their actions do not jeopardize threatened and endangered species and that, through their authority, they help bring about the recovery of such species.

Federal Compliance with Pollution Control Standards (Executive Order 12088) states that federal agencies must comply with applicable pollution control standards.

Protection and Enhancement of Environmental Quality (Executive Order 11514, as amended by Executive Order 11991) establishes the policy for federal agencies to provide leadership in environmental protection and enhancement.

1.6.2 Land Use and Natural Resources Management

FLPMA, as amended (43 U.S.C. 1701, et seq.), provides for public lands to be generally retained in federal ownership for periodic and systematic inventory of the public lands and their resources; for a review of existing withdrawals and classifications; for establishment of comprehensive rules and regulations for administering public lands statutes; for multiple-use management on a sustained yield basis; for protection of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values; for receiving fair market value for the use of the public lands and their resources; for establishment of uniform procedures for any disposal, acquisition, or exchange; for identification and protection of ACECs; for recognizing the nation's need for domestic sources of minerals, food, timber, and fiber from the public lands, including implementation of the Mining and Mineral Policy Act of 1970; and for payments to compensate states and local governments for burdens created as a result of the immunity of federal lands from state and local taxation. The general land management regulations are provided in 43 CFR 2000, Subchapter B.

The General Mining Law of 1872, as amended (30 U.S.C. 22, et seq.), provides for locating and patenting mining claims where a discovery has been made for locatable minerals on public lands in specified states. Regulations for staking and maintenance of claims on BLM-administered lands are listed in 43 CFR 3800.

The Mineral Leasing Act of 1920, as amended (30 U.S.C. 181, et seq.), provides for the leasing of deposits of coal, phosphate, sodium, potassium, oil, oil shale, native asphalt, solid and semisolid bitumen, bituminous rock or gas, and lands containing such deposits owned by the United States, including those in national forests but excluding those acquired under other acts subsequent to February 25, 1920, and those lands within the national petroleum and oil shale reserves. Regulations for onshore oil and gas leasing are provided in 43 CFR 3100.

The Federal Coal Leasing Amendments Act of 1976 (30 U.S.C. 201, et seq.) requires competitive leasing of coal on public lands and mandates a broad spectrum of coal operations requirements for lease management. Coal leasing regulations for BLM-administered lands are provided in 43 CFR 3400.

The Materials Act of 1947, as amended (30 U.S.C. 601–604, et seq.), provides for the sale of common variety materials for personal, commercial, or industrial uses and for free use for local, state, and federal governmental entities. The sales of mineral materials are controlled by the regulations listed in 43 CFR 3600.

The Taylor Grazing Act of 1934, as amended (43 U.S.C. 315), provides authorization to the Secretary of the Interior to establish grazing districts from any part of the public domain of the United States (exclusive of Alaska) which, in the Secretary's opinion, are chiefly valuable for grazing and raising forage crops; to regulate and administer grazing use of the public lands; and to improve the public rangelands. Regulations for grazing permits are provided in 43 CFR 4100.

The Public Rangelands Improvement Act of 1978 (43 U.S.C. 1901, et seq.) provides for the improvement of range conditions on public rangelands, research on wild horse and burro population dynamics, and other range management practices.

The Federal Noxious Weed Act of 1974, as amended (7 U.S.C. 2814), provides for the designation of a lead office and a person trained in the management of undesirable plants, establishment and funding of an undesirable plant management program, completion and implementation of cooperative agreements with state agencies, and establishment of integrated management systems to control undesirable plant species.

The Wild Free Roaming Horse and Burro Act of 1971 provides for the management, protection, and control of wild horses and burros on public lands and authorizes "adoption" of wild horses and burros by private individuals. Regulations applicable to wild horse and burro management on BLM-administered lands are provided in 43 CFR 4700.

Executive Order 12548 provides for establishment of appropriate fees for the grazing of domestic livestock on public rangelands and directs that the fee shall not be less than $1.35 per animal unit month.

The Wilderness Act of 1964 (16 U.S.C. 1131, et seq.) provides for the designation and preservation of wilderness areas.

1.6.3 Air Quality

The Clean Air Act of 1990, as amended (42 U.S.C. 7401, 7642), requires BLM to protect air quality, maintain federal- and state-designated air quality standards, and abide by the requirements of the state implementation plans.

Wyoming Air Quality Standards and Regulations, Chapters 1 to 11, specify the requirements for air permitting and monitoring to implement Clean Air Act and state ambient air quality standards.

1.6.4 Water Quality

The Clean Water Act of 1987, as amended (33 U.S.C. 1251), establishes objectives to restore and maintain the chemical, physical, and biological integrity of the nation's water. The act also requires permits for point source discharges to navigable waters of the United States and the protection of wetlands, and includes monitoring and research provisions for protection of ambient water quality.

Wyoming Water Quality Regulations implement permitting and monitoring requirements for the National Pollutant Discharge Elimination System, operation of injection wells, groundwater protection requirements, prevention and response requirements for spills, and salinity standards and criteria for the Colorado River Basin.

Protection of Wetlands (Executive Order 11990) requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Floodplain Management (Executive Order 11988) provides for the restoration and preservation of national and beneficial floodplain values, and enhancement of the natural and beneficial values of wetlands in carrying out programs affecting land use.

1.6.5 Cultural Resources

The Historic Sites Act (16 U.S.C. 461) declares national policy to identify and preserve historic sites, buildings, objects, and antiquities of national significance, thereby providing a foundation for the National Register of Historic Places (NRHP).

The National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 470), expands protection of historic and archeological properties to include those of national, state, and local significance. The NHPA (in Section 106) requires federal agencies to take into account the potential effects of agency actions on properties listed on or eligible for the NRHP. Agencies are also required to consult with the State Historic Preservation Office (SHPO), and sometimes with the Advisory Council on Historic Preservation, concerning those effects. The SHPO is also sometimes consulted concerning applicable methods for determining whether or not there are NRHP-eligible properties in the area of potential effect of an agency undertaking, whether properties are eligible, and appropriate mitigation measures. The NHPA (in Section 110) also requires federal agencies to identify properties that may qualify for listing on the NRHP, to nominate such places to the register, and to develop plans for their management. Furthermore, both Section 110 and the Archeological Resources Protection Act of 1979 (ARPA) require federal agencies to develop proactive programs to interpret archeological resources for the benefit of the public.

ARPA, as amended (16 U.S.C. 470a, 470cc, 470ee), requires permits for the excavation or removal of federally administered archaeological resources, encourages increased cooperation among federal agencies and private individuals, provides stringent criminal and civil penalties for violations, and requires federal agencies to identify important resources vulnerable to looting and to develop a tracking system for violations.

The Antiquities Act of 1906 protects objects of historic and scientific interest on public lands. It authorizes the President to designate historic landmarks and structures as national monuments and provides penalties for people who damage these historic sites. The act has two main components: (1) a criminal enforcement component, which provides for the prosecution of persons who appropriate, excavate, injure, or destroy any historic or prehistoric ruin or monument, or any object of antiquity on lands owned or controlled by the United States, and (2) a component that authorizes a permit for the examination of ruins and archaeological sites and the gathering of objects of antiquity on lands owned or controlled by the United States.

The American Indian Religious Freedom Act (AIRFA) clarifies U.S. policy pertaining to the protection of Native Americans' religious freedom. The special nature of Native American religions has frequently resulted in conflicts between federal laws and policies and religious freedom. AIRFA, passed in 1978, acknowledges prior infringement on the right of freedom of religion for Native Americans from other federal laws. Furthermore, it states in federal policy that laws passed for other purposes were not meant to restrict the rights of Native Americans. The act establishes a policy of protecting and preserving the inherent right of individual Native Americans (including American Indians, Eskimos, Aleuts, and Native Hawaiians) to believe, express, and exercise their traditional religions.

Protection and Enhancement of the Cultural Environment (Executive Order 11593) directs federal agencies to locate, inventory, nominate, and protect federally owned cultural resources eligible for the NRHP and to ensure that their plans and programs contribute to preservation and enhancement of non-federally-owned resources.

The National Trails System Act of 1968, as amended (16 U.S.C. 1241–1249), establishes a national trails system and requires that federal rights in abandoned railroads be retained for trail or recreation purposes, or sold with the receipts to be deposited in the Land and Water Conservation Fund. The purpose of the act is to provide the means for outdoor recreation needs of an expanding population and to promote the preservation of and access to outdoor areas and historic resources of the United States by instituting a national system of recreation, scenic, and historic trails, designating the Appalachian Trail and the Pacific Crest Trail as the initial components of the system, and prescribing the methods and standards by which additional components may be added to the system.

1.6.6 Hazardous Materials

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (42 U.S.C. 9601–9673), provides for liability, risk assessment, compensation, emergency response, and cleanup (including the cleanup of inactive sites) for hazardous substances. The act requires federal agencies to report sites where hazardous wastes are or have been stored, treated, or disposed of, and requires responsible parties, including federal agencies, to clean up releases of hazardous substances.

The Resource Conservation and Recovery Act (RCRA), as amended by the Federal Facility Compliance Act of 1992 (42 U.S.C. 6901–6992), authorizes the Environmental Protection Agency (EPA) to manage, by regulation, hazardous wastes on active disposal operations. The act waives sovereign immunity for federal agencies with respect to all federal, state, and local solid and hazardous waste laws and regulations. Federal agencies are subject to civil and administrative penalties for violations and to cost assessments for the administration of the enforcement.

The Emergency Planning and Community Right-To-Know Act of 1986 (42 U.S.C. 11001–11050) requires the private sector to inventory chemicals and chemical products, to report those in excess of threshold planning quantities, to inventory emergency response equipment, to provide annual reports and support to local and state emergency response organizations, and to maintain a liaison with the local and state emergency response organizations and the public.

Table 1-1. Land and Mineral Ownerships and Administrative Jurisdictions Within the JMH CAP Planning Area

Areas the CAP Decisions WILL Cover:	**Approximate Acres[1]**
A. Areas where the land surface and mineral estate are both federally owned and are both administered by the BLM[2]	567,080
B. Areas where the land surface is federally owned and administered by the BLM and the mineral estate is owned and administered by the State of Wyoming[3]	7,720
C. Areas where the land surface is owned and administered by private individuals and the total mineral estate is federally owned and administered by the BLM[4]	4,950
D. Areas where the land surface is owned and administered by private individuals and the coal is federally owned and administered by the BLM[4]	2,010
E. Areas where the land surface is owned and administered by private individuals and the oil and gas is federally owned and administered by the BLM[4]	30
F. Areas where the land surface is owned and administered by private individuals and the other federal minerals are federally owned and administered by the BLM[4]	40
G. Areas where the land surface is owned and administered by the State of Wyoming and the mineral estate is federally owned and administered by the BLM[4]	640
H. Areas where the land surface is owned and administered by the State of Wyoming and the coal is federally owned and administered by the BLM[4]	80
Total BLM-administered federal land surface to be covered by CAP decisions (A + B)	574,800
Total BLM-administered federal mineral estate to be covered by CAP decisions (A + C + D + E + F + G + H)	574,830
Areas the CAP Decisions Will NOT Cover:	
I. Areas where the federal land surface is administered by the Bureau of Reclamation and the federal mineral estate is administered by the BLM[5]	1,980
Total BLM-administered federal mineral estate that will NOT be covered by RMP decisions	1,980
J. Areas where the land surface and minerals are both owned by private individuals and the BLM has no administrative authority[6]	8,800

K.	Areas where the land surface and minerals are both owned by the State of Wyoming and the BLM has no administrative authority[6]	29,000

Total Land Surface Acres in the JMH CAP Planning Area (All Ownerships)[1] 622,340

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[1] Because of land surface and mineral ownership overlaps and administrative responsibility overlaps, acreage figures are not additive.

[2] In areas where the federal land surface and federal mineral estate are both administered by the BLM, the CAP decisions will cover both the land surface and the mineral estate.

[3] In areas where the federal land surface is administered by the BLM, and the minerals are privately owned or owned by the State of Wyoming, the CAP decisions will cover only the BLM-administered federal land surface. Although these surface management decisions may have some effect on the ability to manage and develop the non-federally-owned minerals, the CAP decisions will not pertain to the non-federal mineral estate. At the same time, surface and minerals management actions and development activities anticipated in these areas will be taken into account for purposes of cumulative impact analysis in the CAP.

[4] In areas where the land surface is privately owned or owned by the State of Wyoming, and the minerals are federally owned, the CAP decisions will cover only the BLM-administered federal mineral estate. Although the land and resource uses and values on the non-federal surface will be taken into account and will affect development of the federal mineral management decisions, these decisions will not pertain to the state- and privately owned land surface. At the same time, surface and minerals management actions and development activities anticipated in these areas will be taken into account for purposes of cumulative impact analysis in the CAP.

[5] In areas where the federal land surface is administered by the Bureau of Reclamation, and the federal mineral estate is administered by the BLM, the land surface planning and management decisions are the responsibility of the Bureau of Reclamation. Any BLM administrative responsibilities on these lands (for example, actions concerning the federal mineral estate) are handled case by case and are guided by the other surface management agencies' policies, procedures, and plans. Thus the CAP will not include management decisions for the federal minerals on these lands. At the same time, surface and minerals management actions and development activities anticipated on these lands will be taken into account for purposes of cumulative impact analysis in the CAP.

It is also important to note that, while other BLM responsibilities include surface management of the lands withdrawn for purposes of the Bureau of Reclamation, they are carried out in accordance with an interagency agreement between the two agencies. Administrative jurisdiction (including land use planning) for these lands lies with the Bureau of Reclamation.

[6] The CAP will not include any management decisions for areas where the land surface and minerals are both privately owned or owned by the State of Wyoming.

CHAPTER 2—DESCRIPTION OF ALTERNATIVES

To prepare the Coordinated Activity Plan (CAP) for the Jack Morrow Hills (JMH) planning area, comprehensive alternative CAPs were developed to address the resource management objectives identified during the scoping process.

2.1 DEVELOPMENT OF ALTERNATIVES

The alternatives developed for this analysis were formulated to include the full range of management options or actions that could be implemented in the planning area. The previous options and alternatives analyzed for the Green River Resource Management Plan (RMP) and those analyzed for the original draft Environmental Impact Statement (EIS) and the supplemental draft EIS for the JMH CAP were reviewed, taking into account management and resource issues identified by BLM technical staff in the Rock Springs Field Office (RSFO). New information obtained on resources in the planning area since preparation of the supplemental draft EIS, along with public comments and input from cooperating agencies and users of the lands and resources in the JMH CAP planning area, were also considered in the development of alternatives for this final EIS.

After the original draft EIS for the JMH CAP was completed in June 2000, the Solicitor for the Department of the Interior issued an opinion stating that the original draft EIS did not consider a full range of alternatives for management of the JMH CAP planning area. The Solicitor's opinion directed BLM to evaluate alternatives for the CAP, which included a full range of available management options for protection of resources and land management. BLM was directed to evaluate all reasonable alternatives for management of the planning area as needed to comply with the Code of Federal Regulations (CFR), specifically 40 CFR 1502.14(a), which is the Council on Environmental Quality's (CEQ) rule for the range of alternatives that must be considered for an EIS to meet the requirements of the National Environmental Policy Act (NEPA).

In response to the Solicitor's opinion, the Director of BLM determined that a supplemental draft EIS would be prepared to include a range of alternatives required to comply with NEPA and to select a JMH CAP that addresses all planning decisions for the area which were deferred in the Green River RMP. The range of alternatives considered for the JMH CAP includes the full range of possible management options and actions for land uses and resource preservation under BLM's obligation to provide for multiple land use and resource protection as required by the Federal Land Policy and Management Act (FLPMA) and other laws. An example of additional management options and actions considered for analysis in the supplemental draft EIS and this final EIS include withdrawal of areas from consideration for locatable mineral resource development as provided for under FLPMA and the 1872 mining laws.

2.1.1 Alternatives Development Process

BLM complied with NEPA requirements in developing alternatives for this final EIS, including seeking public input and analyzing an adequate range of reasonable alternatives, including a No Action Alternative. In developing alternatives, BLM also took into consideration management options for planning decisions that were deferred in the Green River RMP as well as direction provided by the Record of Decision for the Green River RMP. Where necessary to meet the planning criteria for the JMH CAP, address public comments, and provide a reasonable range of alternatives, the alternatives include management options for the planning area that would modify or amend decisions in the Green River RMP. Finally, all alternatives meet the management objectives for each BLM resource and land management program.

The process used to develop the alternatives began with a review of the Green River RMP (October 1997), the original draft EIS for the JMH CAP (June 2000), the supplemental draft EIS for the JMH CAP, and the existing policies and mandates of BLM. During this review, management objectives and actions from the Green River RMP applicable to the JMH CAP planning area were identified (Appendix 2). Public input received during the 90-day comment period on the original draft EIS and supplemental draft EIS for the JMH CAP, and also during the scoping process, was reviewed to ensure that all issues and concerns would be identified and addressed, as appropriate, in developing the alternatives and their management action options. (For example, either leasing or not leasing federal minerals in sensitive areas could be considered an action option.) The resource and land use programs were consolidated into the following eight basic management categories:

- Land and water resources management
- Heritage resources management
- Travel-access-realty management
- Recreation resources management
- Mineral and alternative energy resources management
- Visual resources management
- Special management area management
- Air resources management.

Each category contained specific subcategories based on the resources in the JMH CAP planning area and the land use programs of BLM. The management categories were used to describe the range of alternatives and their management options and actions.

Development of alternatives began with identifying and analyzing the No Action Alternative, taking into consideration public comments. Other alternatives were then developed. Public review of these preliminary alternatives was conducted to solicit public input into the development of alternatives before development of the Proposed JMH CAP. Among all the alternatives, the Proposed JMH CAP was developed last.

An adequate range of alternatives has now been developed for a comparative analysis. Descriptions of the five alternatives addressed in this final EIS are summarized in Table 2-1.

2.1.2 Management Objectives

Management objectives or goals were defined for each management category and for each resource and land use program BLM must address in the planning process. The management objective for each category also defines the overall goal for each category. The management objectives for the management categories are as follows:

- **Land and Water Resources Management:** The planning area would be managed to maintain or enhance land and water resources using ecological principles and science-based performance criteria.
- **Heritage Resources Management:** The planning area will be managed to expand the opportunities for scientific study and educational and interpretive uses of cultural and paleontological resources, to protect and preserve important cultural and paleontological resources and/or their historic record for future generations, to resolve conflicts between cultural/paleontological resources and other resource uses, and to foster opportunities for Native Americans to use heritage resources.

- **Travel-Access-Realty Management:** The planning area would be managed to manage the public lands to support the goals and objectives of other resource programs, to respond to public demand for land use authorizations, and to acquire administrative and public access where necessary.
- **Recreation Resources Management:** The planning area would be managed to ensure the continued availability of outdoor recreational opportunities sought by the public while providing for other resource values, to meet legal requirements for the health and safety of visitors, and to reduce conflicts between recreation and other types of resource uses.
- **Mineral and Alternative Energy Resources Management:** The planning area would be managed to provide opportunities for mineral extraction and energy development while protecting other resource values.
- **Visual Resources Management:** The planning area would be managed to maintain or improve scenic values and visual quality and to establish priorities for managing the visual resources in conjunction with other resource.
- **Special Management Areas Management:** The planning area would be managed to maintain or enhance the resource values and characteristics for which the area was designated as a special management area.
- **Air Resources Management:** The planning area would be managed to maintain and, where possible, enhance present air quality levels and, within the scope of BLM's authority, minimize emissions that may add to acid rain, cause violations of air quality standards, or reduce visibility.

It is important to note that all management options or actions for each land and resource use directly and/or indirectly relate to each other. Therefore, management options within each section of an alternative may apply or relate to other sections of that alternative (e.g., Wyoming Standards for Healthy Rangelands apply to all resource uses and activities but are not repeated in each resource section in the alternatives). To gain a full appreciation for the management prescriptions affecting any one resource category, the reader should refer to all resource categories for other management prescriptions and guidance that may apply to the resource category in question.

2.1.3 Alternatives and Management Options Considered but Eliminated from Detailed Analysis

The following alternatives and management options were considered as possible methods of resolving the issues but were eliminated from detailed analysis because they were unreasonable or not practical because of technical, legal, or policy factors.

2.1.3.1 National Conservation Area Designation or National Park Designation

Designating the JMH CAP planning area as a National Conservation Area (NCA) or a National Park was suggested during the scoping process as a possible method of resolving some resource conflicts and planning issues. The options were considered but were not analyzed in detail. Designation of an NCA or a National Park is not a land use planning decision. This EIS focuses on the analysis of alternative management scenarios for the public lands and resources within the planning area, as directed in 43 CFR 1610. Designations of an NCA or National Park are congressional designations, which Congress can enact at any time, and are outside the scope of analysis for the JMH CAP.

2.1.3.2 Other Special management Area Designations

Designating other special management areas or designating the entire planning area a single special management area, such as an area of critical environmental concern (ACEC), were considered as possible methods for resolving some of the planning issues. The proposal for making the entire JMH CAP planning area an ACEC was eliminated from further analysis because the entire area did not meet the relevance and importance criteria and special management needs required for ACEC consideration (Appendix 1). However, the portions of the planning area that did meet the relevance and importance criteria were addressed in the alternatives analyzed in detail. The alternatives analyzed in detail include various considerations for designating new ACECs and expanding existing ACECs. Research natural areas (RNAs) are also identified through the same procedures set forth in the guidance provided in BLM Manual 1613.

Designating new special recreation management areas (SRMA) was eliminated from detailed analysis because no new areas were determined to meet the criteria for this designation, where congressionally recognized recreation values exist or where significant public recreation issues or management concerns occur. Two SRMAs exist in the planning area. These are the Greater Sand Dunes and the Oregon, Mormon Pioneer, Pony Express, and California National Historic Trails. No other areas were identified that needed special or more intensive types of management, such as detailed recreation planning or greater managerial investment (e.g., facilities, supervision, etc.). However, the alternatives analyzed in detail include various considerations for managing recreation resources in the JMH CAP planning area. The remainder of the planning area is an Extensive Recreation Management area, as identified in the Green River RMP.

Designating portions of the area as a National Natural Landmark was also suggested as a possible method of resolving some of the planning issues. The options were considered but were not analyzed in detail. Designation of a National Natural Landmark is not a land use planning decision. This EIS focuses on the analysis of alternative management scenarios for the public lands and resources within the planning area, as directed in 43 CFR 1610. Designation of a National Natural Landmark is a U.S. Park Service designation, which the U.S. Park Service can enact at any time and is outside the scope of analysis for the JMH CAP. However, the alternatives analyzed in detail in the EIS include analysis of geologic features such as the Killpecker Sand Dunes, Boars Tusk, Oregon Buttes, Pinnacles, and Steamboat Mountain.

2.1.3.3 Closure to Livestock Grazing

The elimination of livestock grazing from all public lands in the planning area was considered as a possible method for resolving some of the planning issues related to vegetative resources in the Green River RMP EIS and was dropped from detailed analysis in that document. The same reasons for eliminating the “no grazing” option from detailed analysis in the EIS for the Green River RMP also apply to the EIS for the JMH CAP.

Resource conditions on the BLM-administered public lands in the planning area, including range vegetation, watershed, and wildlife habitat, do not warrant prohibition of livestock grazing throughout the planning area. However, reduction or elimination of livestock grazing may be necessary in specific situations where livestock grazing would significantly conflict with the protection and/or management of other resource values or uses. Such determinations would be made during site-specific activity planning and would be based on several factors, including monitoring studies and the ability to meet the Wyoming Standards for Healthy Rangelands.

2.1.3.4 Closure to Mineral Leasing

Closing the planning area to new mineral leasing of federal minerals was considered as a possible method to resolve conflicts with other resource uses. Because the federal leasable minerals in much of the planning area have already been leased and portions of the area are developed, this option would not help resolve the issues. The proposal was eliminated from further analysis because resource conflicts tend to be located in specific, scattered areas and are thus not conducive to entire JMH CAP planning area. Closing the entire planning area to new mineral leasing would eliminate mineral development and production activities in areas where conflicts do not exist, thereby placing unreasonable restrictions on such activities.

In addition, based on the Reasonably Foreseeable oil and gas Development Scenario (RFD) and the Hydrocarbon Occurrence and Development (HOD) report for the JMH CAP area, BLM does not anticipate a large amount of new development that would lead to unacceptable levels of adverse effects in all areas. The analysis of impacts indicated that effects were not anticipated on every acre and that not all acres where development would occur were so sensitive as to preclude all new development. Therefore, because the entire planning area does not have conflicts with fluid mineral leasing, closure to new leasing of federal oil and gas resources in the entire planning area is unreasonable.

Because development is likely to be limited in scope and effect, it was concluded that it would not be reasonable to analyze this option in detail. However, not issuing new mineral leases in portions of the planning area in response to other identified resource needs is addressed in the alternatives analyzed in detail. The alternatives analyzed in detail include various considerations for maximizing individual resource values and uses in specific areas where conflicts exist, and for closing these areas to mineral leasing and related development.

2.1.3.5 Maximum Unconstrained and Maximum Constrained Alternatives

Alternatives and general management options that proposed and/or promoted maximum development, production, or use of one resource at the expense of other resources were not analyzed in detail. Likewise, alternatives and general management options that proposed and/or promoted the elimination of development, production, or use of one resource for the purposes of promoting other resource values were not analyzed in detail. Generally, these options do not meet the objectives of BLM's multiple use management mandate and responsibilities (FLPMA Section 202(c) and (e)). In addition, this approach would not meet the direction developed for the planning area, which is described in the Record of Decision for the Green River RMP EIS. However, the alternatives analyzed in detail do include various considerations for maximizing individual resource uses in specific areas where conflicts exist and for eliminating individual resource uses or maximizing resource values in specific areas where conflicts exist.

2.1.3.6 Applying Standard Lease Notice 1 as the Only Mitigation for Surface Disturbing and Disruptive Activities Due to Oil and Gas Exploration and Development Activities

Application of Standard Lease Notice 1 as the only mitigation for surface disturbing activities due to oil and gas exploration and development activities was not analyzed in detail. Lease Notice 1 is an oil and gas term for the standard lease notice that is included in all federal oil and gas leases. The notice provides guidance for use or occupancy and, in some cases, for prohibition of surface disturbing activities in areas with slopes in excess of 25 percent, within 500 feet of water and/or riparian areas, within 500 feet of interstate highways and within 200 feet of other rights-of-way, within ¼ mile of occupied dwellings, or on material sale sites. The notice also provides prohibition of construction with frozen material or during periods when the soil material is saturated or when watershed damage is likely to occur. The mitigation described in this lease notice applies to all surface disturbing and disruptive activities, whether or not they are related to oil and gas exploration and development activities (i.e., range improvement projects, recreation structures, rights-of-way, etc.). This Lease Notice 1 option was addressed in the draft EIS for the Green River RMP. The analysis in that EIS indicated that potentially significant impacts to resources and uses in the planning area would result if Lease Notice 1 were the only mitigation required, demonstrating that minimal mitigation would not be sufficient to meet resource objectives or BLM's multiple use management mandate and responsibilities. However, applying Lease Notice 1 as the only mitigation for surface disturbance and disruptive activities in portions of the planning area, in response to other identified resource needs, is addressed in the alternatives analyzed in detail.

2.1.3.7 Authorizing Activities with a No Surface Occupancy Requirement (for All Surface Disturbing and Disruptive Activities) on the Entire Planning Area

A no surface occupancy (NSO) requirement to preclude surface use of an area by surface disturbing and disruptive activities would apply to all such disturbance and disruptive activities, not only to those resulting from mineral exploration and development. Applying this requirement to the entire planning area as project mitigation was considered but dropped from detailed analysis.

Much of the planning area is already leased for oil and gas. Exploration and development activities could (and likely will) occur on some of those leased areas. Not all nonleased or undeveloped areas contain the sensitive or significant resources that warrant this most restrictive stipulation. Such a restriction would deny accessibility to the area and would likely prohibit any surface disturbing or disruptive projects related to constructing range improvements, watershed protection improvements, wildlife habitat improvements, recreation developments, roads and other rights-of-way, and other such developments and improvements. This could also impact areas with sensitive resources on adjacent leased areas, as activity would be moved to these adjacent areas. However, applying the NSO requirement as mitigation for surface disturbing and disruptive activities in portions of the planning area, in response to other identified resource needs, is addressed in the alternatives analyzed in detail.

2.1.3.8 Prohibiting Oil and Gas Exploration and Development Activity on Existing Leased Areas

During scoping and the public comment period for the supplemental draft EIS, it was suggested that an alternative be considered that would evaluate impacts of a prohibition of further exploration or development of federal lands and minerals that are already leased for oil and gas. Under this option, activities would continue on private and state lands and minerals, but not on federal lands and minerals. After review of the leases issued for federal minerals, BLM determined that this alternative was not reasonable.

To prohibit any new development on all existing leases in the JMH CAP (and to indefinitely retain temporary suspensions that are in effect in portions of the planning area) is unreasonable because all lands with existing leases are not so sensitive or critical that some level of development cannot occur. In addition, timing of development on existing leases can provide for avoiding unacceptable levels of adverse effects and for balancing a mix of multiple uses in the JMH CAP area. Some development has occurred in this area and is ongoing. The effects of this development as a whole do not cause major conflicts with resources and users to the extent that the existing development should be precluded.

In addition, based on the RFD and HOD for the JMH CAP area, BLM does not anticipate a large amount of new development that would lead to unacceptable levels of adverse effects in all areas with existing leases. The analysis of impacts indicated that effects were not anticipated on every acre, or every lease, and that not all acres where development would occur were so sensitive as to preclude all new development. Therefore, closure to new leasing or not developing federal oil and gas resources on existing leases within the entire planning area is unreasonable. Closure to new leasing of other federal minerals in the entire planning area is also unreasonable because the entire planning area does not have conflicts with oil and gas or other mineral leasing.

Because mineral development is likely to be limited in scope and effect, it was concluded that it would not be reasonable to analyze this prohibition option in detail. However, restrictions on oil and gas leasing and leasing or development of other mineral resources in portions of the planning area in response to other identified resource needs are addressed in the alternatives analyzed in detail. The alternatives analyzed in detail do include various considerations for maximizing individual resource values and uses in specific areas where conflicts exist and for closing those areas to mineral leasing and related development.

2.1.3.9 Buy Back/Exchange of Existing Producing Mineral Leases

During scoping, it was suggested that an option be considered that would buy back producing federal mineral leases within the planning area or exchange them for federal mineral interests outside the planning area. This option was not analyzed in detail, because the current level of oil and gas production as a whole does not cause major conflicts with other resources or resource uses. In addition, buy back of producing mineral leases would not be cost effective. However, the alternatives analyzed in detail do include consideration of buy back of non-producing leases.

2.1.3.10 Eliminating Surveys for Threatened and Endangered or Sensitive Species Required by the Endangered Species Act, Federal Regulation, and the Wyoming Standards for Healthy Rangelands

It was suggested during the scoping process that conducting surveys concerning threatened and endangered as well as sensitive species in relation to proposed actions or activities should be eliminated. The Endangered Species Act (ESA) was passed by Congress to conserve, protect, enhance, and manage endangered species and their habitats. Further, federal regulations require that habitats for threatened and endangered species, and species of special concern or sensitive species will be maintained or enhanced. To meet these requirements, surveys are necessary to determine whether the species of concern and their related habitats occur in the area that may be affected by a proposed action or activity. Because species may move and occupy different areas at different times, survey information does not remain static and will be updated as needed. The option to eliminate the requirement for the surveys was determined to be unreasonable, because it would be against the law, regulation, and policy, and the option was therefore not analyzed in detail.

2.1.3.11 Designation of New Wilderness Study Areas

In April 2003, during the public review and comment period for the supplemental draft EIS, settlement of a lawsuit over the designation of new wilderness study areas (WSAs) on BLM-administered public lands in Utah (State of Utah v. Department of the Interior, 2003) resulted in a change of direction on wilderness designation. The settlement resulted in the issuance of BLM Washington Office Instruction Memorandum No. 2003-195 (Rescission of National Level Policy Guidance on Wilderness Review and Land Use Planning) which rescinded the BLM Wilderness Inventory and Study Procedure Handbook (H-6310-1). Essentially, the settlement established that the authority of BLM to conduct wilderness reviews, including the establishment of new WSAs, expired no later than 1993 with submission of the wilderness suitability recommendations to Congress pursuant to Section 603 of FLPMA; Section 202 of FLPMA does not apply to new WSA proposals; and consideration of new WSA proposals on BLM-administered public lands is no longer valid

As a result of the settlement direction, the information contained in Appendix 18 of the supplemental draft EIS is no longer valid and will not be repeated in this final EIS document. Also, neither the Pinnacles Geographic Area nor the three new WSA proposals submitted during the supplemental draft EIS public review and comment period were considered for WSA designation in this final EIS. See Appendix 18 of this final EIS for further information on this subject.

2.2 MANAGEMENT ACTIONS COMMON TO ALL ALTERNATIVES

Management actions common to all alternatives, as presented in this chapter, are integral to but are not repeated in the descriptions for each of the alternatives. Specific limitations on managing resources and land use programs guided the development of the alternatives. These limitations are defined in the various laws and regulations that govern BLM management decisions. They are also set forth in the planning criteria to ensure that management actions within all alternatives are compliant with nondiscretionary laws and regulations. Because of these specific limitations, management actions common to all alternatives are discussed below in the management actions' respective categories.

2.2.1 Land and Water Resources Management

Management Objective—The planning area would be managed to maintain or enhance land and water resources using ecological principles and science-based performance criteria.

2.2.1.1 General Management Actions for Land and Water Resources

Healthy Rangelands. The Wyoming Standards for Healthy Rangelands would apply to all resource uses on BLM-administered lands. These standards are the minimal acceptable conditions for addressing the health, productivity, and sustainability of the rangeland. The standards describe healthy rangelands rather than rangeland byproducts. Achievement of a standard is determined through observing, measuring, and monitoring appropriate indicators. An indicator is a component of a system whose characteristics (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles. The standards would direct management of public lands and focus the implementation of this activity plan toward the maintenance or attainment of healthy rangelands.

Proper Functioning Condition. Riparian areas would be managed to attain or maintain a minimum standard of proper functioning condition (PFC), which is the minimum acceptable level of ecological condition for riparian areas. The PFC for different types of riparian-wetland systems is fully defined in TR 1737-15, "A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas," and TR 1737-16, "A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas." PFC can be summarized as the minimum acceptable level of ecological status where vegetation, land form, and/or woody debris create a level of inherent resiliency that allows the stream or wetland system to be protected from erosive forces, capture sediment, provide for infiltration, and create appropriate habitat. Riparian areas would be maintained, improved, or restored to enhance forage conditions, provide wildlife habitat, and improve stream and water quality. To achieve PFC, riparian areas would be managed to maintain dominance by species capable of stabilizing soils and stream banks. All riparian areas would be assessed on an as-needed basis to determine existing condition and whether specific management actions would be needed for improvement.

Site-specific activity and implementation plans would be prepared where needed to identify methods to achieve or maintain PFC as a minimum. Plans could include measures to reduce erosion and sediment yield, promote ground cover, and enhance water quality.

Desired Plant Community. Upland and riparian vegetation would be managed to achieve desired plant community (DPC) objectives. A DPC is a plant community that produces the kind, proportion, and amount of vegetation necessary for meeting or exceeding the land use plan requirements. DPC objectives for upland and riparian areas would be established for the planning area through individual site-specific activity and implementation planning, and as updated ecological site inventory data becomes available. These objectives would focus on native plant species and their natural succession. Particular attention would be given to mountain shrub, basin big sagebrush/lemon scurfpea, aspen, and other unique or important vegetation types. Site-specific DPC objectives would be determined by an interdisciplinary team, usually comprised of specialists in soil, vegetation, hydrology, and biology. The team determines desired vegetative conditions for an area by considering ecological potential, current and anticipated resource uses, applicable publications, and professional judgment.

Vegetation Treatments. Herbicide loading sites would be prohibited within 500 feet of water sources, floodplains, riparian areas, and special status plant locations and would be used in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.

Watershed Health Assessments. Watershed health assessments would be initiated to determine the condition of the watershed including riparian areas, and would be prioritized based on levels of development, rangeland standards, PFC, and other available data. Watersheds with more sensitive baseline conditions would be the focus for increased monitoring efforts and mitigation (Appendixes 5, 6).

2.2.1.2 Fire Management

Management Objective—The planning area would be managed to use prescribed fire as a management tool to help meet multiple use resource management goals; and to provide cost effective protection from wildfire to life, property, and resource values.

Fire Management Implementation Plan. Fire management in the planning area would be implemented through the Fire Management Implementation Plan for BLM-Administered Public Lands in the State of Wyoming. The plan emphasizes protecting natural resources and property while recognizing the essential role fire plays in restoring and maintaining the health of the public lands. The primary objectives of the plan are to use prescribed fire as a management tool to help meet multiple use resource management goals and to provide cost effective protection from wildfire to life, property, and resource values. The plan would be reviewed and updated as necessary to be consistent with federal wildland fire policy and the National Fire Plan.

2.2.1.3 Water Resources Management

Management Objective—The planning area would be managed to stabilize and conserve soils; increase vegetative production; maintain or improve surface and ground water quality; and to protect, maintain, or improve wetlands, floodplains, and riparian areas.

Water Quality. All surface disturbing activities would be required to adopt design strategies that serve to reduce erosion and maintain or improve water quality. Aquifer recharge areas would be managed to maintain or enhance recharge volume and ground water quality. Vegetative communities would be managed for density and diversity appropriate for the recharge areas. Additional protective management actions for the protection of water quality and recharge areas could include using closed systems for drilling fluids and limiting road density, impermeable surfaces, and surface occupancy.

Activities in aquifer recharge areas could be allowed if a site-specific analysis determines that no unacceptable impacts would occur to 100-year floodplains, wetlands, riparian areas, or water quality, and a plan to mitigate impacts to water quality is approved.

Permanent Facilities. Proposals for linear crossings in 100-year floodplains, wetlands, and riparian areas would be considered on a case-by-case basis.

Erosion Control. When applicable, erosion control plans would be required as part of surface disturbing project proposals.

Colorado River Salinity Control. BLM would continue to participate with federal, state, and local government agencies to develop and implement salinity control plans for the Colorado River Basin, and to maintain existing and future applicable water quality plans.

Wetlands and Floodplains. Wetlands and floodplains would be managed in accordance with Executive Orders 11988 and 11990 and Section 404 of the Clean Water Act.

Riparian Management Exclosures. Riparian management exclosures would be closed to livestock grazing.

Fluid Mineral Wells. Water wells constructed to provide water for drilling of fluid mineral wells (oil, gas, or coalbed gas wells) would be constructed in compliance with BLM regulations for resource protection. Hydrogeologic investigations would be required where there was a reasonable expectation that surface water features were in connection with geologic formations being dewatered. Such investigations would serve to determine the potential extent of the effect and provide information that could assist in the mitigation of undesirable effects related to development. Attributes that could trigger a hydrogeologic investigation would include, but would not be limited to, a preexisting designation of an area as a recharge zone; similar water chemistry between surface and ground waters; proximity of a proposed project to shallow water tables, springs and/or seeps, wetlands, streams, or water courses; and/or underlying lithology that suggests surface-ground water communication, such as dipping geologic beds, fractures in the underlying rocks, and shallow producing zones. Mitigation requirements would also be implemented as needed to protect surface waters.

2.2.1.4 Wild Horses Management

Management Objective—The planning area would be managed to protect, maintain, and control viable, healthy herds at appropriate management levels (AML) of wild horses in the Great Divide Basin Herd Management Area (HMA) while retaining their free-roaming nature, provide adequate habitat for free-roaming wild horses through management consistent with principles of multiple use and environmental protection, and to provide opportunity for the public to view wild horses.

Wild Horse Herd Management Area Boundaries and Appropriate Management Levels. Wild horse populations would continue to be managed within the Great Divide Basin Wild Horse HMA at an AML of 415 to 600 horses.

Activity and Monitoring Plans. Site-specific activity planning would be implemented to support herd management decisions throughout the Great Divide Basin HMA. A site-specific activity plan and related monitoring plan would be prepared and implemented for the Great Divide Basin HMA to ensure that objectives for vegetation management are met and that adequate forage is provided to support the AML of 415 to 600 horses. Annual monitoring data would be collected to evaluate progress toward meeting management goals and objectives. Public education and interpretation for the public enjoyment of wild horse herds in the Great Divide Basin HMA would be provided through interpretive signs and access to sites for viewing horses.

2.2.1.5 Livestock Grazing Management

Management Objective—The planning area would be managed to improve forage production and ecological conditions for the benefit of livestock use while providing for other resource values.

Guidelines for Livestock Grazing Management. The Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management (Appendix 10) would apply to all livestock grazing activities on public lands. These standards and guidelines address management practices at the grazing allotment management plan (AMP) and watershed levels and are intended to maintain desirable conditions or improve undesirable rangeland conditions within reasonable timeframes. If livestock grazing were determined to be a factor in not meeting the Wyoming Standards for Healthy Rangelands, appropriate management actions would be implemented, as determined through cooperation between BLM, livestock operators, and interested publics. Achieving the standards or making significant progress toward achievement of the standards would be the first priority for all grazing allotments.

Rangeland and Riparian Habitat. Implementation of grazing management systems (AMP) would assist in improving or maintaining the desired range condition. Approved AMPs, or other activity plans intended to serve as the functional equivalent to an AMP, for each of the designated grazing allotments would provide the necessary guidance for achieving grazing management objectives. Appropriate actions for improving degraded rangeland and riparian habitat could include, but would not be limited to, reduction of permitted animal unit months (AUMs), modified turnout dates, livestock water developments, range improvements, modified grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions.

Forage Utilization Levels. Forage utilization levels for upland and riparian species would be in accordance with individual AMPs, or other activity plans intended to serve as the functional equivalent of an AMP. Determination of forage utilization levels would be based on PFC guidelines, BLM reference handbooks, and professional judgment (Appendix 10).

Livestock Water Developments and Range Improvements. Compatibility with special status plant species would be required.

2.2.1.6 Vegetation Management

Management Objective—The planning area would be managed to maintain or enhance vegetation community health, composition, and diversity to meet watershed, wild horse, wildlife, and livestock grazing resource management objectives and to provide for plant diversity (desired plant communities).

Special Status Plant Species. Special status plants are those species federally listed as threatened or endangered, proposed for listing, or candidates for listing under the ESA. These species also include those designated by each BLM State Director as sensitive, and any species designated by a state agency in a category implying potential endangerment or extinction. The State of Wyoming does not have an official list of designated sensitive, threatened, or endangered plant species. Surveys would be conducted of potential habitat for federally listed, proposed, or candidate threatened and endangered plant species before any surface disturbance. Should any such species be found, all disruptive activities would be halted until species-specific protective measures were developed and implemented. For listed species, protective measures would be developed and implemented with the U.S. Fish and Wildlife Service (USFWS).

Fire Suppression. A site-specific analysis would be prepared for all fire management actions around special status plant species sites to determine the appropriate fire management response. Fire equipment and fire suppression techniques, such as vegetation clearing, would be limited to existing roads and trails in special status plant species habitat.

Threatened and Endangered Species. Surveys would be conducted on any potential habitat for listed, proposed, or candidate ESA species before surface disturbance or depletion of water sources. Should a species be located, formal consultation with USFWS would occur. Management prescriptions to provide, maintain, or improve habitat would be developed on a case-by-case basis.

Invasive Species. An invasive species is nonnative with respect to a particular ecosystem, and its introduction is likely to cause harm to the economy, environment, or human health. Federal agencies are directed under Executive Order 13112 to expand and coordinate efforts to prevent the introduction and spread of invasive species. Preventing the introduction and proliferation of invasive species would be accomplished through close monitoring and containment of infestations and through implementation of best management practices for all surface disturbing activities (Appendix 6). Public education regarding invasive species and the means to address them would also be promoted.

Forest and Woodland Health. Management of conifer and aspen communities would be designed to promote forest and woodland health. Old decadent trees may be left standing or downed to provide cover or other habitat for wildlife (Animal Inn). Animal Inn is an education and information program focused on the value of dead, dying, and hollow trees for wildlife and fish habitat.

2.2.1.7 Wildlife Habitat Management

Management Objective—The planning area would be managed to maintain, improve, or enhance the biological diversity of wildlife species while ensuring healthy ecosystems; to restore disturbed or altered habitat, with the objective of attaining desired native plant communities while providing for wildlife needs and soil stability; and, to the extent possible, to provide suitable wildlife habitat and forage to support the Wyoming Game and Fish Department (WGFD) strategic plan population objectives.

Habitat Management Plan. A habitat management plan (HMP) identifies management actions to be implemented to achieve specific objectives related to RMP decisions. An HMP focuses on priority species and their habitats and is generally limited to a specific geographic area. HMPs would guide BLM in managing and rehabilitating wildlife habitat in site-specific locations within the planning area. HMPs could include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives (in coordination with the WGFD and other appropriate federal agencies). To the extent possible, suitable wildlife habitat and forage would be provided to support the WGFD strategic plan objectives. Changes in the WGFD planning objective levels would be considered based on habitat capability, availability, and site-specific analysis.

Water Developments. Wildlife water developments to maintain or improve wildlife habitat and resource conditions would be considered on a case-by-case basis.

Special Status Wildlife Species. Special status wildlife species are those species federally listed as threatened or endangered, proposed for listing, or candidates for listing under the ESA. They also include species designated by each BLM State Director as sensitive, and any species designated by a state agency in a category implying potential endangerment or extinction.

Federal agencies are required to ensure that the actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of species listed as threatened or endangered or that adversely modify or destroy their critical habitat under the ESA. The ESA requires federal agencies (e.g., BLM) to consult with USFWS to determine whether their actions may affect any listed or proposed species and to document their determinations in a biological assessment (Appendix 3). Land use decisions would be implemented with appropriate conservation measures or with reasonable and prudent alternatives to avoid jeopardizing any species or habitat or to avoid the need to list species or their habitat.

Surveys or searches would be conducted of potential habitat for federally listed, proposed, or candidate threatened and endangered wildlife species before any surface disturbance. Special status species habitat would be protected from habitat degradation, and BLM would take proactive measures to improve habitat on an as-needed basis per BLM 6840 policy and Section 7 of the ESA.

Sensitive Habitat. Crucial winter range or sensitive habitats, birthing areas, the connectivity area (migration corridor), nesting sites, and sensitive fisheries habitats would be maintained or improved. This would be accomplished by maintaining habitat or reducing habitat loss or alteration, improving habitat where possible, and by applying appropriate mitigation requirements (e.g., distance and seasonal limitations and rehabilitation) to all appropriate activities. Exceptions could be provided on a case-by-case basis should exception criteria (Appendix 4) be met. Mitigation requirements would be determined on a case-by-case basis.

Predator Damage Control. BLM would continue to coordinate with the Animal and Plant Health Inspection Service–Wildlife Services (APHIS-WS) and review their annual management plan for animal damage control activities on public lands.

All Greater Sage-Grouse Habitats. Avoidance areas for greater sage-grouse habitats may vary depending on natural topographic barriers, terrain, vegetation structure and cover, type of activity, line-of-sight distance, habitat needs, and other factors. Greater sage-grouse habitats would be protected from habitat degradation, and measures would be taken to improve habitat on an as-needed basis in accordance with BLM 6840 policy.

Black-Footed Ferret. The USFWS has established survey protocols for the black-footed ferret (listed as endangered under the ESA). Surveys for black-footed ferrets would be completed according to current USFWS protocol within 1 year prior to conducting any surface disturbing or disruptive activities in all or portions of potential ferret habitat areas (prairie dog colonies 200 acres or greater in size) because of the close association of the two species (Appendix 3). If ferrets or evidence of ferrets were found, the USFWS would be immediately informed, and no projects would begin in the area until the BLM and USFWS determine if and how the project should be conducted. Should a ferret be found in an area after the surveys have been conducted, all disruptive activities would be stopped until protective measures developed with the USFWS could be implemented. Surface disturbing activities could proceed provided survey results indicated no presence of black-footed ferrets. BLM would cooperate with USFWS and WGFD on any black-footed ferret reintroduction within the JMH CAP planning area.

Mountain Plover. Mountain plover surveys would be required prior to authorizing any surface disturbing or disruptive activities in potential plover habitat. Surveys would be conducted within suitable mountain plover habitat by a qualified biologist using protocol determined by the Rock Springs BLM biologist.

Raptor Nesting Sites. Active and historic raptor nesting sites would be protected and managed (e.g., through distance restrictions) for continued nesting activities. Different species of raptors may require different types of protective measures.

Introduction and Reintroduction of Species. BLM would cooperate with WGFD in studies for the introduction and reintroduction of native and nonnative (game) wildlife and fish species.

BLM would cooperate with the USFWS in studies for, and reintroduction of, special status species.

2.2.2 Heritage Resources Management

Management Objective—The planning area would be managed to expand the opportunities for scientific study and educational and interpretive uses of cultural and paleontological resources, to protect and preserve important cultural and paleontological resources and/or their historic record for future generations, to resolve conflicts between cultural/paleontological resources and other resource uses, and to foster opportunities for Native Americans to use heritage resources.

The State Historic Preservation Office (SHPO) would be consulted under provisions of the National Historic Preservation Act (NHPA) on any potential effects on heritage resources. Sites that are not eligible for the National Register of Historic Places (NRHP) would be managed on a case-by-case basis according to their values. Sites that are listed or eligible for listing on the NRHP would be managed for their local, regional, and national significance in accordance with the NHPA and the Archaeological Resources Protection Act (ARPA). Sites would be managed to ensure against adverse effects, through proper mitigation if disturbance or destruction was not avoidable. Mitigation may include scientific information retrieval as well as other measures, such as interpretation and improved public appreciation of the heritage resource.

Heritage Resources Protection. Heritage resources in special management areas would remain protected through specific and general management actions (mitigation requirements and site-specific management prescriptions) associated with designated ACECs, WSAs, and National Historic Trails (Appendix 7). Heritage resources are found in the Greater Sand Dunes ACEC (including Boars Tusk and Crookston Ranch), White Mountain Petroglyphs ACEC, South Pass Historic Landscape ACEC (including the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails), and the Tri-Territory Marker (Map 2). Other areas may be identified and included in the future pursuant to procedures, including public participation, outlined in Appendix 7.

Protection of Scientific Values. Management of heritage resources would include inventories and mitigation as needed for specific projects. An appropriate level of analysis of all surface disturbing activities would be conducted to determine the potential effect of the activity on the resource and its eligibility for listing on the NRHP. Site stewardship and public education aspects of the Heritage Resource Program would continue to be implemented. Sites eligible for inclusion in the NRHP because of their scientific value would be protected. Preservation of the scientific information would be the preferred mitigation method should any such sites have to be impacted by other activities. These sites include Finley, Krmpotich, and Eden-Farson archaeological sites, and the paleosol deposition area. Other sites will be included as they are located, recorded, and evaluated for NRHP eligibility.

The confidential locations of the Finley, Krmpotich, and Eden-Farson archaeological sites would be maintained. Interpretive information would be developed and made available at the RSFO.

National Register Eligible Sites. All National Register-eligible historic sites would be protected through provisions of the NHPA and ARPA.

Native American Sites. Consultation would occur with Native American tribal governments in accordance with the American Indian Religious Freedom Act (AIRFA) for the protection of recognized traditional uses and cultural values in the planning area.

Native American respected places (located generally in the Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, and Joe Hay Rim areas) and the Indian Gap Trail would be protected by provisions of the NHPA and AIRFA. Surface disturbance and disruptive activities would be prohibited within a minimum of 100 feet of respected places. Actual distance would be determined on a case-by-case basis.

Paleontological Sites. Documented significant fossil sites would be avoided to protect scientific and educational values. If impacts cannot be avoided, sites would be evaluated and surveyed as needed by a qualified paleontologist. A mitigation plan that may include activity monitoring, fossil documentation, recovery, and storage in a federally approved repository, would be coordinated with BLM before any surface disturbing activity could occur.

Unique Geologic Features. The Boars Tusk area would be closed to surface disturbing activities, mineral material sales, and use of explosives and blasting. The area within a ½-mile radius of Boars Tusk (including Boars Tusk) would be closed to blasting and explosive charges. The Boars Tusk area would be open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the site; however, facilities would be prohibited from being developed on the geologic feature. The Boars Tusk area would be a right-of-way avoidance area. The Boars Tusk and approximately 1,400 acres of BLM-administered public lands in the surrounding area would be closed to any surface mining activity but open to consideration of subsurface mining methods. Activities or ancillary facilities related to subsurface mining would be prohibited.

Tri-Territory Marker. The Tri-Territory Marker is a right-of-way exclusion area and is closed to surface disturbing activities. The Tri-Territory Marker would be withdrawn from mineral location and closed to coal and sodium exploration. The Tri-Territory Marker would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area.

2.2.3 Travel, Access, and Realty Management

Management Objective—The public lands in the planning area would be managed to support the goals and objectives of other resource programs, to respond to public demand for land use authorizations, and to acquire administrative and public access where necessary.

Rights-of-Way. The planning area, with the exception of defined exclusion and avoidance areas, would be open to considering grants of rights-of-way.

Off-Highway Vehicle Management. Management of off-highway vehicle (OHV) activities would be in accordance with Executive Order 11644, as amended by Executive Order 11989, and applicable regulations (43 CFR 8340) which address OHV use on public lands. Designation and authorization of OHV use would be designed to protect resource values, promote safety of users, and minimize conflict among various uses of public lands. OHV designations include Open, Limited, and Closed (see Glossary for definitions). Until specific designations could be put in place, areas of designated roads and trails would be managed the same as areas limited to existing roads and trails.

Specific roads and trails may be closed to OHV use for public health and safety reasons, for restoration or remediation actions, or for other valid reasons.

Exceptions to closed or limited OHV designations may be granted by the Authorized Officer in consideration of such factors as scientific purposes and emergency access needs.

Over-the-Snow Vehicles. Travel by over-the-snow vehicles would generally be subject to the OHV designations, just as are all other motorized vehicles. Proposals for over-the-snow vehicle travel contrary to these provisions would be considered on a case-by-case basis.

Land Withdrawals and Exchanges. Public lands would be retained in federal ownership unless it was determined to be in the best public interest to dispose of some of them.

Land withdrawals and exchanges identified in the Green River RMP would be pursued. Exchanges would conform to the JMH planning objectives and actions. BLM acquisition of lands would be considered to facilitate various resource management objectives. The preferred method for acquisition would be through exchange. Land exchanges are considered to be discretionary and voluntary real estate transactions between the willing parties involved. Exchanges for state lands in WSAs and other special management areas would be considered to ensure easier and consistent management in these areas. Exchanges would be considered to acquire state or private lands that hold high cultural and historical value and that have important resource values, such as habitat for threatened and endangered species. Exchanges to acquire state of private lands would also be considered for facilitating resource management objectives, such as preventing habitat fragmentation.

Ownership Adjustments. Aquatic, wetland, and riparian habitat would not be suitable for disposal unless opportunities exist for land exchanges of equal or greater value (including monetary and functional resource values).

Access. Access would be guaranteed across public lands to landlocked private and state lands consistent with FLPMA.

2.2.4 Recreation Resources Management

Management Objective—The planning area would be managed to ensure the continued availability of outdoor recreational opportunities sought by the public while providing for other resource values; meet legal requirements for the health and safety of visitors; and to reduce conflicts between recreation and other types of resource uses.

Management of recreation resources would comply with applicable regulations (43 CFR 8300 [recreation permit administration]) for functions and activities such as OHV, visitor services, special recreation use permits, and commercial operations. All management actions and recreation uses would focus on the health and safety of the user and would provide for recreational opportunities while protecting sensitive resources.

Backcountry Byways. Recreation project plans would be developed for existing backcountry byways.

Recreation Project Plans. Recreation project plans and interpretive prospectuses would be developed as necessary to provide for recreational opportunities in the following areas: Crookston Ranch historic site, Boars Tusk, Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, National Historic Trails, and White Mountain Petroglyphs.

Camping. Areas would be closed to camping throughout the JMH CAP planning area if resource damage occurred.

Special Recreation Use Permits. Special recreation use permits would be considered on a case-by-case basis. A Plan of Operation would be required for all commercial recreational operators and outfitters.

Appropriate mitigation would be included in special recreation permits, commercial recreation uses, and major competitive events to provide resource protection and public safety.

2.2.5 Minerals and Alternative Energy Resources Management

Management Objective—The planning area would be managed to maintain or enhance opportunities for mineral exploration and development while providing for other resource values.

All minerals and energy resource management actions would recognize valid existing rights and ensure compliance with existing legal and regulatory requirements. This scope would include leases issued under the Mineral Leasing Act of 1920 and Amendments, and mining claims filed under the Mining Act of 1872.

2.2.5.1 Leasable Fluid Minerals Management

Areas that cannot be offered for lease include WSAs and other areas where fluid mineral leasing and development would not be in compliance with laws or with land use planning decisions that prohibit fluid mineral leasing and development in certain areas.

For fluid mineral leases, valid existing rights would be recognized. Lease stipulations would be applied as necessary (Table 2-2). These stipulations would notify the leaseholder that development activities may be limited, prohibited, or implemented with mitigation measures to protect specific resources. The stipulations would condition the leaseholder's development activities and provide BLM the authority to require other mitigation or to deny some proposed exploration and development methods. The general types of resource protections in lease stipulations include—

- Controlled surface use (CSU) through limitation on the amount and type of surface disturbance
- CSU through avoidance of other resources
- Timing restrictions on development activity
- No surface occupancy (NSO).

A site-specific analysis would be performed before any exploration and development activity to identify and locate resource elements in the lease area that would require protection or mitigation measures (Appendix 14).

Exceptions to lease stipulations and mitigation measures, identified as Conditions of Approval (COAs) attached to an Application for Permit to Drill (APD), could be requested and would be considered on a case-by-case basis (Appendixes 4, 5).

2.2.5.2 Leasable Solid Minerals Management

Exploration. Exploration activities could be conducted on lands that are open to exploration for solid leasable minerals. A site-specific analysis would be performed before any exploration activity to identify and locate resource elements that would require protection or mitigation measures.

Leasing. Leasing of solid minerals would comply with the Mineral Leasing Act of 1920, the Federal Coal Leasing Amendments Act of 1976, and coal regulations and coal planning requirements.

WSAs within the coal development potential area (Map 56) would remain closed to leasing.

2.2.5.3 Locatable Minerals Management

Locatable Mineral Withdrawals. The mineral classification withdrawals for coal and oil shale classifications would be revoked. In some areas these classification withdrawals would remain in effect until replaced with an appropriate withdrawal for other appropriate purposes.

In areas open to mineral location, mining claims could be filed which would allow the claim to be held and developed in accordance with applicable regulations (39 CFR 3809). Mining activities would also comply with other regulatory requirements, including limitations on air and water discharges, waste management, spill prevention, and endangered species.

Surface disturbing exploration activities of 5 acres or less on mining claims would require a notice to BLM. A plan of operations would be required for exploration-related surface disturbances greater than 5 acres, for all surface disturbances greater than casual use, and for a disturbance of any size in ACECs, WSAs, areas closed to OHV use, and any lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat. A plan of operations would specify how the operator intends to manage the mining operation and location of surface disturbing activities.

2.2.5.4 Salable Minerals Management

Mineral Material Sales. Existing contracts for sales of mineral materials, such as sand and gravel, would be recognized. Mining of mineral materials would comply with applicable regulatory requirements (43 CFR 3600) and air and water quality protection regulations. A site-specific analysis would be performed before any exploration or extraction activity to identify and locate resource elements that would require protection or mitigation measures. Mineral material sales that posed potential impacts on identified cultural and historic resources, as well as other sensitive resources, would not be allowed. Mining and reclamation plans would be prepared for use areas to provide protection for sensitive resources and to restore disturbed areas.

2.2.6 Visual Resources Management

Management Objective—The planning area would be managed to maintain or improve scenic values and visual quality and to establish priorities for managing the visual resources in conjunction with other resource values.

The four Visual Resource Management (VRM) classes (I, II, III, IV) set standards for planning, designing, and evaluating projects by identifying various permissible levels of landscape alteration while protecting overall regional scenic quality. The scenic quality of an area is a measure of its visual appeal. The VRM class objectives range from very limited management activity (Class I) to activity allowing major landscape modifications (Class IV). Visual resource classes would be retained or modified to enhance other resource objectives, such as heritage resources, recreation uses, wild horse viewing, and special management areas. Projects would be designed to meet the objectives of established visual classifications, and appropriate mitigation would be applied.

VRM Class I Areas. WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. Oregon Buttes ACEC and the western portion of the Greater Sand Dunes ACEC, which fall within WSAs, would also be managed as VRM Class I areas.

2.2.7 Management of Special Management Areas and Other Management Areas

Management Objective—The planning area would be managed to maintain or enhance the resource values and characteristics for which the area was designated as a special management area.

Special management areas are those areas that require special management considerations to ensure that public land and resources are protected from irreparable damage. These areas include WSAs, ACECs, Special Recreation Management Areas (SRMA), and other special management areas, such as watersheds. Management of these areas would comply with applicable regulations (43 CFR 1610, 6300, 8350) for activities that could occur within them. All management actions and recreation and resource uses would focus on the protection of sensitive resources and the health and safety of the user.

2.2.7.1 Special Management Areas

2.2.7.1.1 Wilderness Study Areas

OHV Use. These areas would be closed to OHV use.

Leasable Fluid Minerals. These areas would be non-discretionary closure areas for fluid minerals leasing.

Leasable Solid Minerals. These areas would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. These areas would be closed to mineral material sales.

VRM. These areas would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape.

2.2.7.1.2 Oregon Buttes ACEC

OHV Use. The ACEC would be closed to OHV use.

Leasable Fluid Minerals. The ACEC would be closed to consideration of fluid minerals leasing.

Leasable Solid Minerals. The ACEC would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. The ACEC would be closed to mineral material sales.

VRM. The ACEC would be managed as a VRM Class I area.

2.2.7.1.3 South Pass Historic Landscape ACEC

Salable Minerals. The South Pass Historic Landscape ACEC (visible portion) would be closed to mineral material sales.

2.2.7.1.4 White Mountain Petroglyphs ACEC

Rights-Of-Way. The ACEC would be managed as a right-of-way exclusion area.

OHV Use. The ACEC would be closed to OHV use outside of identified access and parking areas.

Salable Minerals. The ACEC would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued in the ACEC.

2.2.7.1.5 Greater Sand Dunes ACEC

Salable Minerals. The ACEC would be closed to mineral material sales.

2.2.7.1.6 Special Status Plants ACEC

Disruptive Activities. Potential habitat of special status plant species' communities on federal land or on split estate lands would require searches for the plant species before approving any project or activity. Should species be found, all disruptive activities would be halted until species-specific, protective measures were developed and implemented. For listed species, protective measures would be developed and implemented in coordination with the USFWS.

Locatable Minerals. Withdrawals from mineral location would be pursued where special status plants occur.

Rangeland Management. Herbicide loading sites would be prohibited within 500 feet of special status plant locations and would be utilized in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.

Fire Management. Fire suppression vehicular activities would be limited to existing roads and trails in special status plant species habitat.

A site-specific analysis would be prepared for all fire management activities around special status plant species sites to determine the appropriate fire management response.

2.2.8 Air Resources Management

FLPMA states that, "The public lands [are to] be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values." NEPA indicates that any proposed federal action should comply with other existing environmental laws, regulations, and standards (Section 104 [42 United States Code (U.S.C.) 4334]). This would include the Clean Air Act. In particular, the Clean Air Act Amendments of 1990 indicate that federal actions should comply with state and local as well as federal laws, regulations, and standards. Management actions for air resources management in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

The management actions common to all alternatives presented above are integral to each of the alternatives described below. However, these actions are not repeated in the following section describing the alternatives, other than for the Proposed JMH CAP.

2.3 NO ACTION ALTERNATIVE

The No Action Alternative is defined as a continuation of the present course of management until that management is changed. Ongoing programs initiated under existing legislation, regulations, and the Green River RMP, would continue, even as new plans are developed or new planning efforts are being conducted within the RMP area. Thus, the No Action Alternative describes the current resource and land use management direction in the JMH CAP planning area, represented by the decisions stated in the

Green River RMP, dated October 1997. The No Action Alternative and its analysis is the baseline to which the other alternatives and their analyses are compared.

The public provided comments and information concerning formulation of the No Action Alternative during the scoping period for the supplemental draft EIS (December 6, 2001 to January 11, 2002). Information open houses were held, and a scoping notice was mailed to interested parties and posted on the BLM website. Formal scoping meetings were also held. (See Chapter 5 for more details on the public involvement process.) Comments provided during scoping recommended that the No Action Alternative be the continuation of management objectives and actions stated in the Green River RMP and that valid existing rights should be recognized. In addition, comments recommended that some activity would be reasonably foreseeable and could occur in areas with existing mineral leases (Appendix 13). The cooperating agencies provided similar comments, particularly in regard to the No Action Alternative depicting the Green River RMP decisions.

The No Action Alternative was developed based on these comments. It includes continuation of existing management as stated in the Green River RMP and considers actions that would be reasonably foreseeable based on existing management. Such reasonably foreseeable actions include the lifting of temporary lease suspensions, consideration of vegetation treatments, and location and installation of directional signs for backcountry byways.

2.3.1 Management Actions Common to All Resource or Land Use Programs

Monitoring Plan. An interdisciplinary monitoring plan would be developed to evaluate the overall effectiveness of implementing the management decisions for the planning area. Site-specific monitoring plans would be developed for project proposals.

2.3.2 Land and Water Resources Management

2.3.2.1 General Management Actions for Land and Water Resources

Management actions for land and water resources management in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

Healthy Rangelands. Same as described in Management Actions Common to All Alternatives (Section 2.2)

Proper Functioning Condition. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Desired Plant Community. In addition to Management Actions Common to All Alternatives (Section 2.2), desired plant objectives would focus on native plant communities.

Vegetation Treatments. Vegetative treatments would be designed on a case-by-case basis. Such activities may include plowing and seeding, reseeding (e.g., wildfire rehabilitation), fence construction, weed control, and enhancement of fish and wildlife habitat. Vegetation treatments would be used to abate, alter, or transform vegetation communities in an effort to achieve DPC objectives, protect water quality, dissipate or reduce erosion, and conform to requirements to protect special status plant species and associated habitats (Appendix 6). This may include activities such as manual or mechanical manipulation, chemical treatments, and prescribed burns (Appendix 8). Prescribed burns would be the preferred method of vegetation manipulation to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species. The prescribed burns would generally be conducted in areas having greater than 35 percent sagebrush composition, 20 percent desirable grass composition, and greater than 10 inches of precipitation.

Low-intensity burns during periods of high soil moisture would be the preferred method and timing of prescribed burns in mountain shrub communities. Prescribed burns would be restricted in areas with coal or other fossil fuel outcrops. All vegetation treatments should be designed to be irregular in shape for edge effect, cover, and visual aesthetics. Areas treated with prescribed burns would be rested a minimum of two full growing seasons after treatment and would be fenced from livestock and big game animals if necessary.

Fences. Where documented wildlife conflicts with fencing on public lands occur, fences would be modified, reconstructed, or, if necessary, removed. Herding control of livestock would be encouraged as an alternative to fencing. Fence construction would be in accordance with BLM design standards and located so as not to overly impede wildlife or wild horse movement.

Watershed Health Assessments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Native Vegetation. Native vegetation would be managed to allow natural plant succession to continue, with emphasis on mountain shrub, basin big sagebrush/lemon scurfpea, aspen, and other unique or important vegetation types.

2.3.2.2 Fire Management

Fire Management Implementation Plan. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Wildland and Prescribed Fire: Wildland and prescribed fires would be managed in all vegetation types to maintain or improve biological diversity and the overall health of the public lands.

Fire Suppression. Full fire suppression would be applied in basin big sagebrush/lemon scurfpea vegetation associations. See also Vegetation Treatments (Section 2.3.2.1).

2.3.2.3 Water Resources Management

Water Quality. In addition to Management Actions Common to All Alternatives (Section 2.2), the area within 500 feet of wetlands, riparian areas, and 100-year floodplains and within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities.

Permanent Facilities. The 100-year floodplains, wetlands, and riparian areas would be closed to new permanent facilities (e.g., storage tanks, structure pits). Proposals for linear crossings in these areas would be considered on a case-by-case basis.

Erosion Control. Areas with highly erodible soils would also be avoidance areas for all surface disturbing activities. Surface disturbing activities could be permitted within avoidance areas provided that a mitigation plan is approved and a site-specific analysis determines that unacceptable impact levels would not occur as a result of the activity. When applicable, erosion control plans would be required as part of surface disturbing project proposals.

Colorado River Salinity Control. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Wetlands and Floodplains. In addition to Management Actions Common to All Alternatives (Section 2.2), projects to improve the ecological integrity of the dunal ponds would be considered and evaluated.

Riparian Management Exclosures. Riparian exclosures would be developed and maintained, and exclosure plans would be implemented. Riparian exclosures would be used to protect degraded riparian areas from further impacts and to ensure reclamation of vegetation communities and ecological processes. Exclosures would remain closed to livestock grazing, and AUMs in these exclosures would not be available for livestock use.

Fluid Mineral Wells. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Aquifer Recharge Areas. Aquifer recharge areas would be managed to maintain or enhance recharge volume and groundwater quality by limiting road density, surface disturbance, and surface occupancy to maintain a healthy recharge area.

2.3.2.4 Wild Horses Management

Wild Horse Herd Management Area Boundaries and Appropriate Management Levels. Wild horse populations would be managed within the Great Divide Basin HMA at an AML of 415 to 600 horses. The Great Divide Basin HMA boundaries would remain unchanged.

Activity and Monitoring Plans. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Water Developments. Water developments would be considered to maintain or improve resource conditions and/or enhance wild horse herd distribution and manage forage utilization. Such developments within sensitive wildlife habitats would be permitted provided they conform to wildlife objectives. Compatibility with special status plant species would be required.

Gathering Plan. A selective gathering plan to remove excess horses from inside and outside the HMA would also be developed and implemented. Gathering cycles would vary by gathering plan objectives, resource conditions, and needs. Fertility control would be initiated only if necessary.

Public Education. Opportunity for public education and enjoyment of wild horses would be provided by placing interpretive signs, providing interpretive sites, and providing access to the herd areas.

2.3.2.5 Livestock Grazing Management

Guidelines for Livestock Grazing Management. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Rangeland and Riparian Habitat. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Forage Utilization Levels. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Livestock Water Developments and Range Improvements. Livestock water developments and range improvements would be considered to maintain or improve resource conditions and/or enhance livestock distribution. Compatibility with special status plant species would be required.

Salt or Mineral Supplements. Salt or mineral supplements would be prohibited within 500 feet of riparian habitat and National Historic and Scenic Trails unless analysis shows that the resources (watershed, riparian, recreation, wildlife) would not be adversely affected by livestock concentrations within these areas. Supplements would also be prohibited on areas inhabited by special status plant species, regardless of analysis findings.

2.3.2.6 Vegetation Management

Special Status Plant Species. In addition to Management Actions Common to All Alternatives (Section 2.2), specific management actions related to known locations of special status plant species habitat include closing locations to surface disturbing activities or any disruptive activity that could adversely affect the special status plants or their habitat, as well as closing locations to the location of new mining claims, mineral material sales, OHV use (including those vehicles used for geophysical exploration activities), surveying, and the use of explosives and blasting.

Potential habitat areas for special status species would be avoidance areas for surface disturbing activities (Map 7).

Known locations of special status plant species would be open to consideration for mineral leasing with NSO requirements.

Rights-of-Way Limitations. Areas where Wyoming BLM sensitive plant species are known to exist and/or have potential habitat would be right-of-way avoidance areas (Map 8). Exceptions could be granted by the Authorized Officer if analysis shows that there is no adverse impact to the plant populations.

Fire Suppression. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Threatened and Endangered Plant Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Invasive Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Forest and Woodland Health. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.3.2.7 Wildlife Habitat Management

Habitat Management Plan. In addition to Management Actions Common to All Alternatives (Section 2.2), habitat management plans would be developed as needed for sensitive and/or highly developed and disturbed areas to mitigate wildlife habitat losses. Habitat management plans would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives.

Water Developments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Special Status Wildlife Species. In addition to Management Actions Common to All Alternatives (Section 2.2), should a special status wildlife species be found, all disruptive activities would be halted until species-specific protective measures could be implemented.

Sensitive Habitat. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Predator Damage Control. In addition to Management Actions Common to All Alternatives (Section 2.2), proposed animal damage control activities not compatible with BLM planning and management prescriptions or objectives for other resource activities and users would be identified on a case-by-case basis. APHIS-WS would be requested to amend or adjust the plan accordingly. APHIS-WS would determine the appropriate animal damage control methods in coordination with BLM.

Greater Sage-Grouse Leks, Nesting and Early Brood-rearing Habitat. Surface occupancy (long-term or permanent aboveground facilities) would be controlled within ¼ mile of greater sage-grouse leks (Map 7). Disruptive activities would avoid occupied greater sage-grouse leks from 8:00 p.m. to 8:00 a.m. daily. Disruptive activities would avoid occupied greater sage-grouse leks from usually February 1 to June 30. The actual area to be avoided, usually within ¼ to ½ mile of the lek, and appropriate seasonal limitations would be determined on a case-by-case basis. Seasonal limitations on disturbing and disruptive activities (usually from February 1 to July 31) would apply up to 2 miles from greater sage-grouse leks (nesting and early brood-rearing habitat) on a case-by-case basis (Map 7). Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within 2 miles of greater sage-grouse leks on an as-needed basis.

Greater Sage-Grouse Winter Concentration Areas. Disruptive activities would be prohibited in greater sage-grouse winter concentration areas (Map 7) from November 15 to April 30.

All Greater Sage-Grouse Habitats (Leks, Nesting, Early Brood-Rearing, and Winter Concentration Areas). In addition to Management Actions Common to All Alternatives (Section 2.2), seasonal limitations may be excepted provided criteria in the Procedures for Processing Proposals for Land Use Authorizations in Areas of Seasonal Restriction (Appendix 4) can be met, and appropriate mitigation can be implemented (Appendix 6) as determined by BLM in coordination with commodity users and other appropriate entities.

Big Game Winter Range. Disruptive activities would be prohibited in big game (elk, deer, and antelope) crucial winter range between November 15 and April 30 (Map 7). Seasonal limitations may be excepted provided criteria in the Procedures for Processing Applications in Areas of Seasonal Restriction (Appendix 4) can be met and appropriate mitigation can be implemented (as determined by BLM in coordination with commodity users).

Big Game Birthing Areas. Surface disturbing and disruptive activities and the amount of habitat disturbed would be limited in big game birthing areas from May 1 to June 30.

Black-Footed Ferret. Same as described in Management Actions Common to All Alternatives (Section 2.2)

Mountain Plover. Same as described in Management Actions Common to All Alternatives (Section 2.2)

Game Fish and Special Status Fish Species. Seasonal limitations for surface disturbing activities to protect game and special status fish species during spawning would be applied as necessary.

Raptor Nesting Sites. In addition to Management Actions Common to All Alternatives (Section 2.2), permanent or high profile structures would be prohibited within a specified distance of active raptor nests. Distance would be determined on a case-by-case basis and would depend on the raptor species involved, natural topographic barriers, line-of-sight distances, and other such factors. Temporary disturbances associated with placement of facilities, such as pipelines, as well as other actions, such as seismic activities, may be allowed within ½ to 1 mile of active raptor nests.

Disruptive activities would be seasonally restricted within a ½- to 1-mile radius of occupied raptor nesting sites. Raptor nest surveys would be conducted within a 1-mile radius or linear distance of proposed surface uses or activities during raptor nesting season (see Table 2-3 for dates which vary by species). Seasonal limitations may be excepted provided criteria in the Procedures for Processing Applications in Areas of Seasonal Restriction (Appendix 4) can be met, and appropriate mitigation can be implemented (as determined by BLM in coordination with commodity users).

Introduction and Reintroduction of Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.3.3 Heritage Resources Management

Management actions for heritage resources would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

Heritage Resources Protection. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Protection of Scientific Values. Same as described in Management Actions Common to All Alternatives (Section 2.2).

National Register Eligible Sites. In addition to Management Actions Common to All Alternatives (Section 2.2), sites eligible for inclusion in the NRHP under Criterion D, because of their scientific information content, would be surrounded by a 100-foot avoidance area, pursuant to the Protocol Agreement between BLM and Wyoming SHPO (Appendix 7).

Native American Sites. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Expansion Era Roads and Associated Sites. Expansion Era roads would be managed similar to the historic trails covered in the Oregon/Mormon Pioneer National Historic Trails Management Plan (BLM 1986). Prescriptions from that plan would be applied, although the ¼-mile protective setback might not always be applicable. Management actions would include development of activity plans with the objective of preserving the historical integrity of significant NRHP-contributing segments of the historic roads. Activity plans may include NRHP nomination of those Expansion Era roads that qualify.

Historic Livestock Management Sites. Some historic livestock management sites may be eligible for inclusion in the NRHP within the context of the development of pastoral agriculture in Wyoming and the Rocky Mountain regions. There are no special management or recognition provisions for these sites under existing management.

Native and Euro-American Sites. Historic and archaeological sites within the context of early contact between Native Americans and Euro-American peoples have been identified and understood in general terms. Because of their importance, these sites would continue to be protected by provisions of the NHPA on a case-by-case basis.

Paleontological Sites. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Unique Geologic Features. All actions described for Boars Tusk and surrounding areas would be the same as described in Management Actions Common to All Alternatives (Section 2.2).

Vehicular travel within ½ mile of the Pinnacles Geologic Feature, and including the feature, would be limited to designated roads and trails.

Tri-Territory Marker. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.3.4 Travel, Access, and Realty Management

Management actions for travel management, access, and realty in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

Transportation Planning. Transportation planning would provide for appropriate ingress, egress, and access routes that would follow BLM guidelines and road classifications defined in the Green River RMP (Appendix 12). Arterial roads would be high traffic volume roads that provide primary access to the planning area; collector roads would provide access to large blocks of land; local roads would serve smaller areas; and resource roads would provide access to resource locations.

Travel Management Plan. A travel management plan would not be developed.

Road Installations. Proposed road installations and improvements would follow the Green River RMP management objectives and applicable BLM guidelines.

Geophysical Activities. Geophysical activities would conform to the OHV designations of the Green River RMP. Exceptions may be granted on a case-by-case basis, with appropriate limitations to protect sensitive resources. Detonation activities would not be allowed in areas of sensitive heritage resources and geologic features, such as Boars Tusk, White Mountain Petroglyphs, and historic trails. Geophysical vehicle use would not occur in areas closed to OHV use (Map 9). Geophysical exploration and related detonation activities would be prohibited in WSAs.

Rights-of-Way. The right-of-way restrictions listed in the Green River RMP would apply as applicable to utilities and other realty actions. Areas would be designated as right-of-way avoidance or exclusion areas based the location of specific sensitive resources (Map 8). Map 8 includes the right-of-way avoidance and exclusion areas identified in the Green River RMP. The Tri-Territory Marker and White Mountain Petroglyphs would remain right-of-way exclusion areas. The Steamboat Mountain ACEC would remain closed to communication sites.

Linear Rights-of-Way. No specific actions would be applied to locate linear rights-of-way adjacent to existing roads, trails, or similar facilities.

Winter Access. Winter access would be subject to seasonal road closures. Plowing of roads during the winter would be considered on a case-by-case basis.

OHV Management. In addition to Management Actions Common to All Alternatives (Section 2.2), the OHV decisions in the Green River RMP would be implemented. Specific roads and trails may be seasonally closed to OHV use on an as-needed basis for public health and safety reasons, for restoration or remediation actions, for wildlife or wildlife habitat protection, or for other reasons as determined by BLM (Map 9).

Over-the-Snow Vehicles. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Land Withdrawals and Exchanges. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Ownership Adjustments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Access. In addition to Management Actions Common to All Alternatives (Section 2.2), access to public, state, and private land would be provided throughout the planning area and would be restricted only where necessary to protect public health and safety as well as to protect sensitive resources. Access decisions would be consistent with existing regulatory requirements and would be made for the purposes of providing for the reasonable use and enjoyment of inholdings. Access needs would be considered on a case-by-case basis.

2.3.5 Recreation Resources Management

Management actions for recreation resources management in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

Backcountry Byways. In addition to Management Actions Common to All Alternatives (Section 2.2), public information and education activities would be developed for backcountry byways (Tri-Territory Loop and Red Desert) and would include the development and installation of interpretive and directional signs and the development of recreation project plans. The location of the signs would be coordinated with state and local governments and other interested parties for the Red Desert view point from the dugway of Steamboat Mountain and for the Chicken Springs overlook. Other locations may be identified through coordination with state and local governments and interested parties. Site-specific recreation activity or implementation plans would be prepared as appropriate or necessary.

Greater Sand Dunes Recreation Area. The parking area and camping facilities in the Greater Sand Dunes Recreation Area would be expanded. This would include developing a recreation site plan and addressing public health and safety, resolving user conflict, and protecting adjoining resources.

Recreation Project Plans. In addition to Management Actions Common to All Alternatives (Section 2.2), a recreation project plan and interpretive prospectus would be developed, as necessary, for wild horse viewing areas.

Camping. In addition to Management Actions Common to All Alternatives (Section 2.2), overnight camping would be allowed throughout the planning area, including WSAs, in accordance with BLM guidelines. Dispersed camping would be allowed within 200 feet of a water source except where necessary to protect water quality and wildlife and livestock watering areas. Camping designations are a discretionary action approved by a BLM Authorized Officer. Areas would be closed to camping if resource damage occurs.

Special Recreation Use Permits. In addition to Management Actions Common to All Alternatives (Section 2.2), special recreation use permits would be reviewed and issued. The current permit evaluation process considers the nature of the event, potential impacts to resources, conflicts with other events, and impacts to the quality of other visitors' experiences. Mitigation measures necessary to protect the resources would be included in any permit issued. A Plan of Operation would be required for all commercial recreational operators and outfitters. The Plan of Operation would describe the type, extent, and location of the recreation use and the mechanisms by which the operator/outfitter would prevent impacts to environmental resources. Any requests in special recreation use permit applications to remove natural resources would be evaluated on a case-by-case basis after an environmental analysis process.

Recreational Mining and Other Similar Activity. Recreational mining and other similar activities would be allowed throughout the planning area that are not withdrawn from mineral location, where such withdrawals would not be pursued, or where not closed or restricted by Wyoming Department of Environmental Quality (DEQ) Guideline 19 (Non-coal: Non-commercial Recreation Panning and Dredging). A withdrawal is in place for the White Mountain Petroglyphs ACEC. Withdrawals would be pursued for the western portion of the Greater Sand Dunes ACEC, special status plant species locations, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit.

2.3.6 Minerals and Alternative Energy Resources Management

Management decisions in the Green River RMP on leasing fluid minerals and on locatable minerals were deferred for a portion of the JMH CAP planning area, referred to as the core area. These deferrals were necessary because information concerning potential mineral leasing or locations for mining claims was not yet sufficiently developed for making sound management decisions for the core area. Management actions for Mineral and Alternative Energy Resources Management in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

2.3.6.1 Leasable Fluid Minerals Management

Oil and Gas Leases. In addition to Actions Common to All Alternatives, existing leases that were suspended during the JMH CAP planning process would be reinstated. New leases would be offered outside the core area based on industry interest and resource development potential (Map 10). The core area would be closed to leasing, and no new leases would be issued in the core area.

Lease Stipulations. In addition to Management Actions Common to All Alternatives (Section 2.2), stipulations would be placed on new leases to protect sensitive resources and land uses identified in the Green River RMP (Appendix 2).

Stipulations limiting surface disturbance would be included as a standard provision on all new oil and gas leases offered by the RSFO. Stipulations would prevent surface disturbing activities, such as road, pipeline, or well pad construction, within certain areas unless site-specific mitigation is proposed and approved or a unless a site-specific analysis indicates that the activity would not cause unacceptable levels of impact to other resources. Stipulations would not allow surface disturbing activities to occur—

- In areas with a surface slope in excess of 25 percent
- In Class I and Class II VRM areas
- Within 500 feet of surface water or riparian areas
- Within ¼ mile or visual horizon (whichever is closer) from a historical trail
- During periods when soil material is saturated or frozen or when watershed damage is likely to occur.

Stipulations restricting the timing of development activity to protect wildlife resources would also be included as a standard provision in new oil and gas leases offered in the planning area. Access into certain areas for the construction of drilling pads and for drilling activities would be limited during specific times of the year to prevent impacts based on wildlife seasonal patterns and habitat use. Timing restrictions would not apply to maintenance and operation of producing wells. These stipulations include—

- Drilling and other surface disturbing activity would not be allowed from November 15 to April 30 within areas specified as important big game ungulate winter habitat. This restriction also applies to elk calving areas from May 1 to June 30.
- Drilling and other surface disturbing activity would not be allowed from February 1 to July 31 within areas specified as important raptor and/or sage- and sharp-tailed grouse nesting habitat.
- No surface occupancy would be allowed within portions of leases specified as requiring this protection for identified habitat protection (such as threatened or endangered species habitat) that cannot be protected by seasonal restrictions.

An Authorized Officer of BLM may provide exceptions to any of these limitations when considering an application. Exceptions could be approved if site-specific information indicates that changes to wildlife protection stipulations would not result in unacceptable impacts to wildlife (Appendix 4).

Drilling Permits. In addition to Management Actions Common to All Alternatives (Section 2.2), BLM specialists would review sensitive resources with lease operators to develop and implement protection measures to allow for effective development operations where impacts could be avoided or mitigated.

COAs for APDs would be based on site-specific analysis and would include general surface control, avoidance, and other requirements for mitigation of development impacts consistent with the Green River RMP.

Mitigation requirements, such as seasonal restrictions on drilling, may be required as a result of a site-specific analysis. Stipulations on existing leases could be excepted where site-specific analyses do not identify the presence of the resource of concern addressed by the stipulation (Appendix 4). For existing leases with current standard stipulations, exceptions would be allowed when site-specific analyses show no unacceptable impacts to sensitive resources would occur.

Well spacing requirements for oil and gas resource protection would defer to the Wyoming Oil and Gas Conservation Commission guidance, with consideration for surface resource values.

2.3.6.2 Leasable Solid Minerals Management

Exploration. In addition to Management Actions Common to All Alternatives (Section 2.2), lands outside the Coal Occurrence and Development Potential Area that have not gone through the 20-point screening process would be open for coal exploration unless specifically closed to coal and sodium exploration (Map 11). Exploration proposals would be allowed in open areas on a case-by-case basis, along with mitigation requirements to protect sensitive resources. Areas identified in the Green River RMP as being closed to coal exploration include wetlands, 100-year floodplains, riparian areas, Oregon Buttes ACEC, White Mountain Petroglyphs vista, Boars Tusk, Crookston Ranch, Tri-Territory Marker, raptor nesting sites, greater sage-grouse leks with a ¼-mile buffer, South Pass Historic Landscape ACEC (visible portion), special status plant species sites, Steamboat Mountain ACEC (outside the area with coal recommendations), and WSAs.

Leasing. Lands within the Coal Occurrence and Development Potential Area have been identified as having a known or assumed potential for coal development. These lands are reviewed against 20 criteria to determine whether the lands would be suitable for development (43 CFR 3461). The criteria consider existing resource values such as heritage resources, scenic values, wildlife, threatened and endangered species, natural landmarks, and watersheds. The coal planning decisions made in the GRRMP apply (see Appendix 2). Lands within the planning area with coal development potential (Map 56) have been through the 20-point unsuitability criteria screening and multiple-use conflict analysis. Areas closed to coal leasing (unsuitable) include the western portion of Greater Sand Dunes ACEC, which includes the Sand Dunes WSA (Map 6). Lands within the planning area that have been through the 20-point unsuitability criteria screening process and would be acceptable for further coal leasing and development consideration (with appropriate conditions) are shown on Map 6.

Important geological, ecological, and historic resources would be open to consideration for coal leasing and development by subsurface mining methods. Such areas acceptable for coal leasing with NSO requirements include Boars Tusk and Crookston Ranch. Areas acceptable for coal development by subsurface mining and controls on surface facilities include Steamboat Mountain ACEC, the eastern part of Greater Sand Dunes ACEC, Tri-Territory Marker, and raptor nest sites with a ½- to 1-mile buffer.

2.3.6.3 Locatable Minerals Management

Locatable Mineral Withdrawals. Specific lands within the planning area would be withdrawn from mineral location as identified in the Green River RMP (Map 5). Other withdrawals could be pursued as necessary.

Withdrawals would be revoked for lands classified as prospectively valuable for oil shale. Upon revocation, the area would be open to the filing of mining claims, exploration, and development of locatable minerals. The White Mountain Petroglyphs ACEC and Boars Tusk located in the oil shale classification lands would be withdrawn from mineral location prior to the revocation.

Withdrawals would be revoked for lands classified as prospectively valuable for coal. Upon revocation, the area would be open to the filing of mining claims, exploration, and development of all locatable minerals. Areas that would be withdrawn from mineral location prior to the revocation of the coal classification include Greater Sand Dunes ACEC (western portion), special status plant sites, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit.

In areas open to mineral location, mining claims could be filed which would allow that claim to be held and developed in accordance with applicable regulations (39 CFR 3809). Mining activities would also have to comply with other regulatory requirements, including limitations on air and water discharges, waste management, spill prevention, and endangered species.

2.3.6.4 Salable Minerals Management

Mineral Material Sales. Salable minerals are common use minerals, such as sand and gravel, which can be purchased from the Government on federal lands. The planning area would be open to consideration of mineral material sales except for areas identified as closed to sales, or where development of salable minerals would cause unacceptable impacts (Map 12). Areas closed to mineral material sales include WSAs, Steamboat Mountain ACEC, South Pass Summit, Crookston Ranch, Native American burial sites, Oregon Buttes ACEC, Boars Tusk, White Mountain Petroglyphs, Greater Sand Dunes ACEC, South Pass Historic Landscape ACEC (visible portion), raptor nest sites, and special status plant sites.

Sale areas, community pits, and common use areas would be developed for salable minerals at locations that are compatible with other resources and land uses. Mining and reclamation plans would be required for each proposed sale area and use, and management of the area would be in conformance with other resource protection requirements, including Standard Practices, Best Management Practices, and Guidelines for Surface Disturbing Activities (Appendices 5 and 6).

2.3.6.5 Alternative Energy Management

There were no similar land management decisions made in the Green River RMP.

2.3.7 Visual Resources Management

The planning area would be managed to maintain or improve scenic quality by managing the impacts of human activities and other intrusions on the visual landscape (Map 13). The VRM classes provide the design standards for all surface disturbing projects. Projects would be designed, sited, screened, or painted to reduce visual impacts regardless of the VRM classification. Management actions for VRM in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

VRM Class I Areas. Same as described in Management Actions Common to All Alternatives (Section 2.2).

VRM Class II Areas. Management actions on lands classified as VRM Class II would be designed to retain the existing character of the landscape. A visual transition area of 1 mile adjacent to each WSA would be managed as Class II to retain the existing character of the WSA landscape. A low level of change would be acceptable to the characteristic landscapes of the ACECs, thus South Pass Historic Landscape ACEC, White Mountain Petroglyphs, Greater Sand Dunes ACEC, and the southern portion of Steamboat Mountain ACEC would be managed as Class II. Surface disturbing activities could be seen in these areas but would not attract the attention of the casual observer. Oregon Buttes ACEC lies entirely within the WSA and thus would be managed as VRM Class I.

VRM Class III Areas. Management actions on lands classified as VRM Class III would be designed to partially retain the existing character of the landscape and would allow a moderate level of change. The northern portion of Steamboat Mountain ACEC, the portion of White Mountain that falls within the southwest corner of the planning area, Split Rock, Eden Valley, and the western part of Red Desert Watershed that is included in the planning area would be managed as Class III. Surface disturbing activities could attract attention but would not dominate the view of the casual observer.

VRM Class IV Areas. Management actions on lands classified as VRM Class IV could result in a major modification to the existing character of the landscape. The level of change to the landscape could be high. The remainder of the planning area not managed as VRM Class I, II, or III would be managed as Class IV. Surface disturbing activities could dominate the view of the casual observer and would be the major focus of attention.

2.3.8 Management of Special Management Areas and Other Management Areas

The special management areas would continue to be managed to preserve and protect the integrity and character of the specific areas in accordance with ACEC policies and WSA interim management policies. Management actions for special management areas in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

The designation, boundaries, and management prescriptions of Steamboat Mountain, Greater Sand Dunes, Oregon Buttes, and South Pass Historic Landscape ACECs, as well as the seven WSAs, would remain unchanged. The location and size of the Special Status Plant Species ACEC would remain unchanged but could be expanded in the JMH CAP planning area on a case-by-case basis.

2.3.8.1 Special Management Areas

2.3.8.1.1 Wilderness Study Areas

Geophysical Activities. Geophysical exploration and related detonation activities would be prohibited within these areas.

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

2.3.8.1.2 Oregon Buttes ACEC

Geophysical Activities. Geophysical activities and related detonation activities would be prohibited in Oregon Buttes ACEC.

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area.

Recreation. A recreation project plan and interpretive prospectus would be developed, as necessary, for Oregon Buttes.

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

2.3.8.1.3 South Pass Historic Landscape ACEC

Rights-of-Way. The South Pass Historic Landscape ACEC (portion not visible) would be managed as a right-of-way avoidance area. The South Pass Historic Landscape ACEC (visible portion) would be managed as a right-of way exclusion area.

OHV Use. OHV use within South Pass Historic Landscape ACEC (visible portion) would be limited to designated roads and trails. OHV use within South Pass Historic Landscape ACEC (non-visible portion) would be limited to existing roads and trails.

Leasable Fluid Minerals. The South Pass Historic Landscape ACEC (visible portion) would be open to consideration of to fluid minerals leasing with NSO requirements.

Leasable Solid Minerals. The South Pass Historic Landscape ACEC (visible portion) would be closed to leasable solid minerals exploration and leasing.

Locatable Minerals. Withdrawals from mineral location would be pursued on South Pass Summit.

VRM. The South Pass Historic Landscape ACEC would be managed as a VRM Class II area.

The South Pass Historic Landscape ACEC viewshed would be maintained from approximately 3 miles of the Oregon, Mormon Pioneer, Pony Express, and California National Historic Trail routes. Intrusions within the viewshed area could be allowed provided the results of a visual analysis indicate they are not visible from the trail routes or that they can be mitigated.

2.3.8.1.4 White Mountain Petroglyphs ACEC

Recreation. A recreation project plan and interpretive prospectus would be developed, as necessary.

Leasable Fluid Minerals. The ACEC would be open to consideration of fluid minerals leasing with NSO requirements.

Leasable Solid Minerals. White Mountain Petroglyphs vista would be closed to coal and sodium exploration.

VRM. The ACEC would be managed as a VRM Class II area.

2.3.8.1.5 Steamboat Mountain ACEC

The Steamboat Mountain ACEC designation and boundaries would remain unchanged (Map 14).

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area.

Communication Sites. Communication sites would be prohibited in Steamboat Mountain ACEC.

OHV Use. OHV use would be limited to designated roads and trails.

Recreation. The location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for the Red Desert viewpoint from dugway of Steamboat Mountain.

A recreation project plan and interpretive prospectus would be developed, as necessary, for Steamboat Mountain.

Leasable Solid Minerals. The portions of Steamboat Mountain ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities (Map 6). Those portions outside the coal development potential area would be closed to leasable solid minerals exploration and leasing (Maps 6 and Map 11).

Salable Minerals. The ACEC would be closed to mineral material sales.

VRM. The southern portion of the ACEC would be managed as a VRM Class II area. The northern portion would be managed as VRM class III area.

2.3.8.1.6 Greater Sand Dunes ACEC

The Greater Sand Dunes ACEC designation and boundaries would remain unchanged.

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area (within 1 mile or the visual horizon, whichever is closer).

OHV Use. The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to existing roads and trails.

Recreation. A recreation site plan would be prepared for expansion of the parking area and camping facilities at the Greater Sand Dunes Recreation Area. The plan would address public health and safety, resolving user conflicts, and protecting adjoining resources.

Leasable Solid Minerals. The western portion of the ACEC would be closed to leasable solid minerals exploration and leasing.

The eastern portion of the ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities.

Locatable Minerals. Withdrawals from mineral location would be pursued in the western portion of the ACEC.

VRM. The ACEC would be managed as a VRM Class II area.

2.3.8.1.7 Special Status Plants ACEC

The Special Status Plant Species ACEC (per the Green River RMP) could be expanded into the Jack Morrow Hills CAP area on a case-by-case basis.

Rights-of-Way. Areas where special status plant species occur would be managed as rights-of-way avoidance areas.

OHV Use. Areas where special status plant species occur would be closed to OHV use.

Leasable Minerals. Known locations of special status plant species would be open to consideration for mineral leasing with NSO requirements.

Leasable Solid Minerals. Areas where special status plant species occur would be closed to coal and sodium exploration as identified in the Green River RMP.

Salable Minerals. Areas where special status plant species occur would be closed to mineral material sales.

Rangeland Management. Salt or mineral supplements would not be allowed in areas where special status plant species occur.

Vegetation treatments would be designed to protect and conform to special status plant species.

2.3.8.2 Other Management Areas

2.3.8.2.1 Pinnacles Geologic Feature

The Pinnacles Geologic Feature would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.

OHV Use. OHV use would be limited to designated roads and trails.

VRM. The area would be managed as a VRM Class III area.

2.3.8.2.2 Pinnacles Geographic Area

The Pinnacles Geographic Area would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.

2.3.8.2.3 Red Desert Watershed Management Area

OHV Use. OHV use would be limited to designated roads and trails.

VRM. The area would be managed as a VRM Class III area.

2.4 ALTERNATIVE 1

Alternative 1 provides expanded opportunities to use and develop the planning area, more so than all the other alternatives. This alternative emphasizes development and intensive management and de-emphasizes environmental protection. Resources would still be protected to the extent required by applicable laws and regulations. Development and activities would occur throughout the planning area provided the actions were also in accordance with existing BLM guidelines. However, this alternative could result in modifications or amendments to decisions in the Green River RMP.

2.4.1 Management Actions Common to All Resource or Land Use Programs

Monitoring Plan. An interdisciplinary monitoring plan would be developed to evaluate the overall effectiveness of implementing the management decisions for the planning area. Site-specific monitoring plans would be developed for project proposals.

2.4.2 Land and Water Resources Management

2.4.2.1 General Management Actions for Land and Water Resources

Healthy Rangelands. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Proper Functioning Condition. Same as described in Management Actions Common to All Alternatives (Section 2.2)

Desired Plant Community. Similar to the No Action Alternative, upland and riparian vegetation would be managed to achieve DPC objectives. The DPC objectives would emphasize commodity uses while complying with existing regulations pertaining to sensitive resources.

Vegetation Treatments. In addition to Management Actions Common to All Alternatives (Section 2.2), all methods of vegetative treatments would be considered on a case-by-case basis, without a preference for one type or another.

Fences. Fences on public lands would be modified or reconstructed where documented wildlife conflicts with fencing occur. Fence construction would be in accordance with BLM design standards, with no special consideration for location.

Watershed Health Assessments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Native Vegetation. No special emphasis would be placed on mountain shrub, basin big sagebrush/lemon scurfpea, aspen, or other unique or important vegetation types.

2.4.2.2 Fire Management

Fire Management Implementation Plan. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Fire Suppression. Similar to the No Action Alternative, full fire suppression for basin big sagebrush/lemon scurfpea vegetation associations would be applied.

2.4.2.3 Water Resources Management

Water Quality. In addition to Management Actions Common to All Alternatives (Section 2.2), areas with highly erodible soils, the area within 250 feet of wetlands, riparian areas and 100-year floodplains, and the area within 50 feet of the edge of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities. Surface disturbing activities could be permitted within avoidance areas provided that a mitigation plan is approved and a site-specific analysis determines that adverse impacts would not occur as a result of the activity.

Permanent Facilities. In addition to Management Actions Common to All Alternatives (Section 2.2), new permanent facilities would be allowed in floodplains provided there are no practicable alternatives (Executive Order 11988), and appropriate mitigation measures would be implemented.

Erosion Control. Same as described for the No Action Alternative (Section 2.3).

Colorado River Salinity Control. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Wetlands and Floodplains. In addition to Management Actions Common to All Alternatives (Section 2.2), projects to improve the ecological integrity of the dunal ponds would be considered for development on BLM-administered public lands, as described in the No Action Alternative.

Riparian Management Exclosures. In addition to Management Actions Common to All Alternatives (Section 2.2), existing exclosures could be removed and the area made available for livestock grazing. New exclosures would be considered only if they benefit commodity uses.

Fluid Mineral Wells. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Aquifer Recharge Areas. Aquifer recharge areas would be managed to maintain or enhance recharge volume and ground water quality by limiting the amount of impermeable surfaces in the recharge areas.

2.4.2.4 Wild Horses Management

Wild Horse Herd Management Area Boundaries and Appropriate Management Levels. The management actions for wild horses would be the same as those of the No Action Alternative (Section 2.3).

Activity and Monitoring Plans. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Water Developments. Same as described in the No Action Alternative (Section 2.3).

Gathering Plan. Same as described in the No Action Alternative (Section 2.3).

Public Education. Same as described in the No Action Alternative (Section 2.3).

2.4.2.5 Livestock Grazing Management

Guidelines for Livestock Grazing Management. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Rangeland and Riparian Habitat. In addition to Management Actions Common to All Alternatives (Section 2.2), grazing management systems (AMP) would assist in improving or maintaining the desired range condition. Reductions of active AUMs would not be implemented unless they are the only appropriate action for meeting the Wyoming Standards for Healthy Rangelands.

Forage Utilization Levels. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Livestock Water Developments and Range Improvements. Livestock water developments and range improvements would be considered to enhance livestock production. Compatibility with special status plant species would be required.

Salt or Mineral Supplements. Salt or mineral supplements would be prohibited within 250 feet of riparian habitat and national and scenic trails unless analysis shows that these resources would not be adversely affected. Supplements would also be prohibited on areas inhabited by special status plant species, regardless of analysis findings.

2.4.2.6 Vegetation Management

Special Status Plant Species. In addition to Management Actions Common to All Alternatives (Section 2.2), the management actions for vegetation would be similar to the No Action Alternative (Section 2.3). The one exception to the actions involves special status plant species. Only locations of federally listed, proposed, or candidate species would be avoided or closed from surface disturbing activities until protective measures are developed with the USFWS. Surface disturbing activities would avoid locations of Wyoming BLM sensitive plant species.

Rights-of-Way Limitations. Same as described in the No Action Alternative (Section 2.3).

Fire Suppression. Same as described in the No Action Alternative (Section 2.3).

Threatened and Endangered Plant Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Invasive Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Forest and Woodland Health. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.4.2.7 Wildlife Habitat Management

Habitat Management Plan. Same as described in the No Action Alternative (Section 2.3).

Water Developments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Special Status Wildlife Species. Actions relative to special status species would be the same as described in the No Action Alternative, except only locations of federally listed, proposed, or candidate species would require species-specific mitigation measures as developed with USFWS. Survey protocol for the black-footed ferret would be conducted consistent with USFWS requirements detailed in the No Action Alternative.

Sensitive Habitat. Same as described in Management Actions Common to All Alternatives (Section 2.2), except appropriate distance, seasonal limitations, and mitigation measures would only be applied to greater sage-grouse leks and winter range, mountain plover aggregation areas, and raptor nesting sites. Limitations on surface disturbing activities for Alternative 1 include seasonal limitations and CSU requirements. NSO (in relation to wildlife) would not apply under this alternative (Map 16). The seasonal limitations for Alternative 1 are shown in Table 2-3.

Predator Damage Control. Same as described in the No Action Alternative (Section 2.3).

Greater Sage-Grouse Leks, Nesting, and Early Brood-rearing Habitat. These areas would be managed as similar to the No Action Alternative, except that seasonal limitations for disruptive activities would be determined on a case-by-case basis. Seasonal limitations on surface disturbing and disruptive activities (usually from March 15 to July 15) would apply within actual nesting and early brood-rearing habitat up to 1 mile from greater sage-grouse leks on a case-by-case basis (Map 16). Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within 1 mile of greater sage-grouse leks on an as-needed basis.

Greater Sage-Grouse Winter Range. No actions would be taken specific to these areas.

All Greater Sage-Grouse Habitats (Leks, Nesting, Early Brood-Rearing, and Winter Range). Same as described in the No Action Alternative (Section 2.3).

Big Game Winter Range. No seasonal limitations would be applied to these areas.

Big Game Birthing Areas. No seasonal limitations would be applied to these areas.

Black-Footed Ferret. In addition to Management Actions Common to All Alternatives (Section 2.2), measures would be taken, as appropriate, to reduce potential raptor perches in and around prairie dog towns and colonies.

Mountain Plover. In addition to Management Actions Common to All Alternatives (Section 2.2), active mountain plover nesting aggregation areas (Map 17) would be avoidance areas for surface disturbing and disruptive activities from April 10 to July 10.

Game Fish and Special Status Fish Species. No seasonal limitations would be applied to these areas.

Raptor Nesting Sites. In addition to Management Actions Common to All Alternatives (Section 2.2), disruptive activities would be prohibited within a ¼-mile radius of occupied raptor nest sites during the nesting season (February 1 to July 31).

Introduction and Reintroduction of Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.4.3 Heritage Resources Management

Heritage Resources Protection. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Protection of Scientific Values. Same as described in Management Actions Common to All Alternatives (Section 2.2).

National Register Eligible Sites. Management of heritage resources would include inventories and mitigation as needed for specific projects. An appropriate level of analysis of all surface disturbing activities would be conducted to determine the potential effect of the activity on the heritage resource and its eligibility for listing on the NRHP. Similar to the No Action Alternative, all National Register-eligible historic sites would continue to be protected through provisions of the NHPA and ARPA. Sites eligible for inclusion in the NRHP under Criterion D would be surrounded by a 100-foot avoidance area. Site stewardship and public education aspects of the heritage resource management program would also be pursued.

Native American Sites. Management would be the same as described in the No Action Alternative.

Expansion Era Roads and Associated Sites. As described in the No Action Alternative, Expansion Era roads and associated sites (e.g., Freighter Gap), stage stations, and freighter's camps would be protected under provisions of the NHPA.

Historic Livestock Management Sites. NRHP-eligible historic livestock management sites would be protected from surface-disturbing activities. The area to be protected would be determined on a case-by-case basis.

Native and Euro-American Sites. Interpretive signs would be placed where development activities occur adjacent to these areas. No specific protection measures would be applied other than provisions under the NHPA.

Paleontological Sites. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Unique Geologic Features. Management would be the same as described in the No Action Alternative.

Tri-Territory Marker. Management would be the same as described in the No Action Alternative.

2.4.4 Travel, Access, and Realty Management

Transportation Planning. Transportation planning would be the same as described for the No Action Alternative.

Travel Management Plan. A travel management plan for the JMH CAP area would not be developed. In the Steamboat Mountain ACEC and White Mountain area, travel management activities would follow the OHV designations for these areas.

Road Installations. Travel planning, access limitations, and realty actions would be consistent with existing regulatory requirements and the Green River Basin Advisory Council (GRBAC) recommendations. These recommendations addressed limiting road design standards to accommodate only the intended function of the road, flexibility in placing gathering pipelines, and a road signage system.

Geophysical Activities. Geophysical and related detonation activities would be allowed throughout the planning area subject to the seasonal limitations identified in Wildlife Habitat Management (Section 2.4.2.7) and the limitations for sensitive plant species locations.

Rights-of-Way. Areas would be designated as right-of-way avoidance or exclusion areas based the location of specific sensitive resources (Map 18). The extent of right-of-way exclusion areas would be limited to the Tri-Territory Marker and White Mountain Petroglyphs. Rights-of-way avoidance areas would include sensitive geologic and historic features, vegetation, and wildlife habitat. No additional linear right-of-way restrictions would apply in the planning area. The Steamboat Mountain ACEC would be open to consideration for communication sites.

Linear Rights-of-Way. Same as described for the No Action Alternative (Section 2.3).

Winter Access. Winter access would be limited only by weather conditions. Seasonal road closures would not be implemented. Plowing of roads would be allowed as needed for all uses.

OHV Management. Public lands in the JMH CAP planning area would remain open, limited, or closed (Map 19). The OHV management prescriptions would limit access to designated roads and trails in the Pinnacles Geologic Feature and the visible portion of the South Pass Historic Landscape. The WSAs and specific sensitive resource areas would be closed. Seasonal restrictions would be implemented in specific habitat areas of greater sage-grouse, raptors, and mountain plover on an as-needed basis. The Greater Sand Dunes recreation area would remain open.

Over-the-Snow Vehicles. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Land Withdrawals and Exchanges. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Ownership Adjustments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Access. In addition to Management Actions Common to All Alternatives (Section 2.2), access to public, state, and private land would be provided throughout the planning area and would be restricted only where necessary to protect public health and safety and to protect sensitive resources. Access would be limited on a case-by-case basis to protect sensitive resources in areas of high development potential.

2.4.5 Recreation Resources Management

Management of recreation resources would provide for continued availability of passive and active outdoor opportunities while protecting environmental resources and ensuring the health and safety of users. The maximum degree of public access possible would be accommodated based on OHV designations for the planning area.

Backcountry Byways. Backcountry byways would be managed as described for the No Action Alternative.

Greater Sand Dunes Recreation Area. The parking area and camping facilities at the Greater Sand Dunes Recreation Area would be maintained in their current condition. To avoid conflicts with increased fluid minerals development and to protect the health and safety of users, the recreation area would not be expanded or improved to accommodate additional users.

Recreation Project Plans. Same as described for the No Action Alternative (Section 2.3).

Camping. Same as described for the No Action Alternative (Section 2.3).

Special Recreation Use Permits. Same as described for the No Action Alternative (Section 2.3).

Recreational Mining and Other Similar Activity. Same as described for the No Action Alternative (Section 2.3).

Recreational mining and other similar activities would be allowed in those parts of the planning area that are not withdrawn from mineral location or where such withdrawals would not be pursued. Withdrawn areas include the White Mountain Petroglyphs ACEC. Withdrawals would be pursued for Special Status Plant Species locations, the western portion of the Greater Sand Dunes ACEC, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit.

2.4.6 Minerals and Alternative Energy Resources Management

This alternative would provide for leasing and permitting of mineral development to the degree possible consistent with existing regulatory requirements and statutory withdrawals and closures.

2.4.6.1 Leasable Fluid Minerals Management

Oil and Gas Leases. In addition to Management Actions Common to All Alternatives (Section 2.2), new leases would be offered throughout the planning area, including the core area, based on industry interest and development potential (Map 20). Suspended leases in the planning area would be reinstated and APDs considered, consistent with existing lease stipulations. Interest in new leasing by prospective developers would be used to identify the parts of the planning area that would be offered in lease sales.

Lease Stipulations. The stipulations applied to new leases would be limited to compliance with existing legal requirements for environmental protection.

Drilling Permits. New development activities could be approved through the APD process (Appendix 14). The COAs that would be placed on APDs would require mitigation to protect other resources as required by the regulations for oil and gas development in 43 CFR 3100. The APDs would be required to show the location of surface disturbing activities, and any mitigation measures would be based on site-specific analysis of resources in the lease area. Mitigation measures would be consistent with regulatory standards and the minimum avoidance distances needed to protect identified habitat would be specified in COAs.

Mitigation requirements, such as seasonal restrictions on drilling, may be required as a result of a site-specific analysis. Stipulations on existing leases could be excepted when site-specific analyses do not identify the presence of the resource of concern addressed by the stipulation (Appendix 4). For existing leases with current standard stipulations, exceptions would be allowed when site-specific analyses show that no unacceptable impacts to sensitive resources would occur.

Well locations would be required to comply with Wyoming Oil and Gas Conservation Commission well spacing requirements. These requirements focus on the use and protection of the oil and gas subsurface resource and not on the use and protection of surface resource values.

2.4.6.2 Leasable Solid Minerals Management

Exploration. The planning area would be open to coal exploration activities, with avoidance and right-of-way restrictions as needed to protect sensitive resources (Map 21). Coal and sodium exploration would be prohibited only in areas for which compliance with existing regulatory limitations is required, including WSAs. In areas where surface disturbing activities are limited to protect other resources, those limitations would apply to coal exploration activities, such as drilling of test holes and collection of core samples. Surface disturbing activities related to coal exploration would comply with existing standard practices, best management practices, and guidelines for surface disturbing activities (Appendixes 5, 6).

Leasing. Similar to the No Action Alternative, lands within the planning area having a known or assumed potential for coal development (Coal Occurrence and Development Potential Area) have been reviewed against 20 criteria to determine whether the lands would be suitable for development. Lands within the planning area with coal development potential (Map 56) have been through the 20-point unsuitability criteria screening and multiple-use conflict analysis. Areas closed to coal leasing (unsuitable) include the western portion of Greater Sand Dunes ACEC, which includes the Sand Dunes WSA (Map 22). Lands within the planning area that have been through the 20-point unsuitability criteria screening process and would be acceptable for further coal leasing and development consideration (with appropriate conditions) are shown on Map 22.

Restrictions on mining activity would be required on coal leases as needed to meet existing regulatory requirements for resource protection for threatened or endangered species habitat and cultural and historical resources. Such areas acceptable for coal leasing that would include NSO requirements include Boars Tusk and Crookston Ranch. Areas acceptable for coal development by subsurface mining and controls on surface facilities include Greater Sand Dunes ACEC (eastern portion), Tri-Territory Marker, and raptor nest sites with a ¼-mile buffer.

2.4.6.3 Locatable Minerals Management

Locatable Mineral Withdrawals. Similar to the No Action Alternative, the planning area would be open to filing claims, exploration, and development of locatable minerals with the exception of withdrawn areas (Map 23). Withdrawal from mineral location would be pursued for Indian Gap.

Withdrawals would be revoked for lands classified as prospectively valuable for oil shale. Upon revocation, the area would be open to the filing of mining claims, exploration, and development of locatable minerals. The White Mountain Petroglyphs ACEC and Boars Tusk located in the oil shale classification lands would be withdrawn from mineral location before the revocation.

Withdrawals would be revoked for lands classified as prospectively valuable for coal. Upon revocation, the area would be open to filing of mining claims, exploration, and development of all locatable minerals. Areas that would be withdrawn from mineral location before the revocation of the coal classification include the western portion of the Greater Sand Dunes ACEC, special status plant sites, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit.

2.4.6.4 Salable Minerals Management

Mineral Material Sales. Similar to the No Action Alternative, the planning area would be open to consideration of mineral material sales, except for areas identified as closed to sales or where development of salable minerals would cause unacceptable impacts (Map 24). Areas closed to mineral material sales include WSAs, Crookston Ranch, Oregon Buttes ACEC, Native American burial sites, South Pass Summit, Boars Tusk, White Mountain Petroglyphs, Greater Sand Dunes ACEC, South Pass Historic Landscape (visible portion), raptor nest sites, and special status plant sites.

2.4.6.5 Alternative Energy Management

Alternative Energy Proposals. The planning area would be open to alternative energy development, except where development would violate statutory resource protection requirements. Alternative energy resource development would not be allowed in areas where there would be unacceptable impacts to threatened or endangered species, and associated surface disturbing activities would comply with existing Standard Practices, Best Management Practices, and Guidelines for Surface Disturbing Activities (Appendices 5 and 6). Alternative energy developments would not be allowed to interfere with existing rights.

2.4.7 Visual Resources Management

The planning area would be managed to maintain or improve scenic quality by managing the impacts of human activities and other intrusions on the visual landscape (Map 25). The VRM classes provide the design standards for all surface disturbing projects. Projects would be designed, sited, screened, or painted to reduce visual impacts regardless of the VRM classification

VRM Class I Areas. Same as described in Management Actions Common to All Alternatives (Section 2.2).

VRM Class II Areas. Management actions on lands classified as VRM Class II would be designed for blending into the natural landscape. A visual transition area of 1 mile adjacent to each WSA would be managed as Class II to retain the existing character of the WSA landscape. A low level of change would be acceptable to the characteristic landscapes of the ACECs, thus South Pass Historic Landscape and White Mountain Petroglyphs ACECs, and the part of Greater Sand Dunes ACEC outside the WSA, would be managed as VRM Class II. Surface disturbing activities could be seen in these areas but would not attract the attention of the casual observer. Oregon Buttes ACEC lies entirely within the WSA and thus is managed as VRM Class I.

VRM Class III Areas. There would be no lands within the planning area classified as VRM Class III.

VRM Class IV Areas. The remainder of the planning area not managed as VRM Class I or II would be managed as Class IV. Management actions on lands classified as VRM Class IV could result in a major modification to the existing character of the landscape. The level of change to the landscape could be high. Surface disturbing activities could dominate the view of the casual observer and would be the major focus of attention.

2.4.8 Management of Special Management Areas and Other Management Areas

This alternative would provide for additional use and development in the special management areas consistent with existing regulatory requirements and statutory withdrawals and closures. The designation, boundaries, and management prescriptions of the Greater Sand Dunes, Oregon Buttes, and South Pass Historic Landscape ACECs as well as the seven WSAs would remain unchanged (Map 26).

2.4.8.1 Special Management Areas

2.4.8.1.1 Wilderness Study Areas

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

2.4.8.1.2 Oregon Buttes ACEC

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area.

Recreation. A recreation project plan and interpretive prospectus would be developed, as necessary, for Oregon Buttes.

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

2.4.8.1.3 South Pass Historic Landscape ACEC

Rights-of-Way. The South Pass Historic Landscape ACEC would be managed as a right-of-way avoidance area.

OHV Use. OHV use within the South Pass Historic Landscape ACEC (visible portion) would be limited to designated roads and trails. OHV use within the nonvisible portion would be limited to existing roads and trails.

Leasable Solid Minerals. The ACEC would be open to leasable solid minerals exploration and leasing with avoidance and right-of-way limitations, as needed.

Locatable Minerals. Withdrawals from mineral location would be pursued on South Pass Summit.

VRM. The ACEC would be managed as a VRM Class II area.

The South Pass Historic Landscape viewshed would be reduced to approximately 1 mile in each direction from the center of the Oregon, Mormon Pioneer, California, and Pony Express trail routes. Intrusions within the viewshed area could be allowed provided the results of a visual analysis indicate they are not visible from the trail routes or that they can be mitigated.

2.4.8.1.4 White Mountain Petroglyphs ACEC

Recreation. A recreation project plan and interpretive prospectus would be developed, as necessary.

Leasable Fluid Minerals. The ACEC would be open to consideration of fluid minerals leasing with NSO requirements.

Leasable Solid Minerals. The ACEC would be open to coal and sodium exploration activities subject to avoidance and right-of-way limitations as needed.

VRM. The ACEC would be would be managed as a VRM Class II area.

2.4.8.1.5 Steamboat Mountain ACEC

The Steamboat Mountain ACEC designation would be removed.

Communication Sites. Communication sites would be considered on Steamboat Mountain.

OHV Use. OHV use would be limited to existing roads and trails.

Recreation. Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for the Red Desert viewpoint from dugway of Steamboat Mountain.

A recreation project plan and interpretive prospectus would be developed, as necessary, for Steamboat Mountain.

Leasable Solid Minerals. The portions of Steamboat Mountain ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities (Map 22). Those portions outside the coal development potential area would be closed to leasable solid minerals exploration and leasing (Map 21 and Map 22).

VRM. The ACEC would be managed as a VRM class IV area.

2.4.8.1.6 Greater Sand Dunes ACEC

The Greater Sand Dunes ACEC designation and boundaries would remain unchanged.

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area (with a 1-mile buffer).

OHV Use. The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to existing roads and trails.

Leasable Solid Minerals. The western portion of the ACEC would be closed to leasable solid minerals exploration and leasing. The eastern portion of the ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities.

Locatable Minerals. Withdrawals from mineral location would be pursued in the western portion of the ACEC.

VRM. The ACEC would be managed as VRM Class II area.

2.4.8.1.7 Special Status Plants ACEC

The Special Status Plant Species ACEC would not be expanded into the Jack Morrow Hills CAP area.

Rights-of-Way. Areas where special status plant species occur would be managed as rights-of-way avoidance areas.

OHV Use. Areas where special status plant species occur would be closed to OHV use.

Leasable Fluid Minerals. Known locations of special status plant species would be open to consideration for mineral leasing with NSO requirements.

Leasable Solid Minerals. Areas where special status plant species occur would be open to coal and sodium exploration subject to avoidance and right-of-way limitations as needed.

Salable Minerals. Areas where special status plant species occur would be closed to mineral material sales.

Rangeland Management. Salt or mineral supplements would not be allowed in areas where special status plant species occur.

2.4.8.2 Other Management Areas

2.4.8.2.1 Pinnacles Geologic Feature

The Pinnacles Geologic Feature would continue to be managed as part of the Red Desert Watershed Management Area.

OHV Use. OHV use would be limited to designated roads and trails.

VRM. The area would be managed as a VRM Class IV area.

2.4.8.2.2 Pinnacles Geographic Area

The Pinnacles Geographic Area would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.

2.5 ALTERNATIVE 2

Alternative 2 reduces opportunities to use and develop the planning area. The alternative focuses on improving and protecting habitat for wildlife and sensitive plant and animal species, improving riparian areas and water quality, and protecting historic, cultural, and Native American sites. Alternative 2 would not allow development in areas with competing resource uses and would close or designate portions of the planning area to restrict land uses. Development or activities could occur in specific portions of the planning area provided mitigation measures are implemented.

2.5.1 Management Actions Common to All Resource or Land Use Programs

Monitoring Plan. An interdisciplinary monitoring plan would be developed to evaluate the overall effectiveness of implementing the management decisions for the planning area. Site-specific monitoring plans would be developed for project proposals.

2.5.2 Land and Water Resources Management

2.5.2.1 General Management Actions for Land and Water Resources

Healthy Rangelands. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Proper Functioning Condition. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Desired Plant Community. In addition to Management Actions Common to All Alternatives (Section 2.2), vegetation structure for upland and riparian areas would be managed by DPC objectives that emphasize wildlife habitat, watershed resources, biodiversity values, and maintenance of habitat for special status species. Furthermore, natural plant succession would be promoted in native vegetation communities, with emphasis on mountain shrub, basin big sagebrush/lemon scurfpea, aspen, and other unique or important vegetation types.

Vegetation Treatments. In addition to Management Actions Common to All Alternatives (Section 2.2), vegetation treatments would be limited to noxious weed control and would be designed to protect water quality, dissipate erosion, and conform to requirements to protect special status plant species. Prescribed burns would not be considered. Areas treated with prescribed burns would be rested a minimum of two full growing seasons after treatment and fenced from livestock and big game animals if necessary.

Fences. Similar to the No Action Alternative, fences on public lands would be removed, modified, or reconstructed where documented wildlife conflicts with fencing occur. Fencing would also be used to limit wild horses to the modified boundary of the Great Divide Basin HMA (which excludes the JMH CAP planning area). Herding control of livestock would be encouraged as an alternative to fencing.

Watershed Health Assessments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Native Vegetation. Same as described in the No Action Alternative (Section 2.3).

2.5.2.2 Fire Management

Fire Management Implementation Plan. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Wildland and Prescribed Fire. Prescribed burns would not be considered. Wildland fire would be managed within and outside prescription areas to improve biological diversity and the overall health of the public lands.

Fire Suppression. Limited fire suppression for basin big sagebrush/lemon scurfpea vegetation associations would be applied.

2.5.2.3 Water Resources Management

Water Quality. In addition to Management Actions Common to All Alternatives (Section 2.2), all surface disturbing activities would be required to adopt design strategies that serve to reduce erosion and maintain or improve water quality. The area within ¼-mile of wetlands, riparian areas, and 100-year floodplains would be avoidance areas for surface disturbing activities.

Permanent Facilities. Same as described in the No Action Alternative (Section 2.3).

Erosion Control. Surface disturbing activities would be prohibited in areas of highly erodible soils or soils that are difficult to reclaim.

Colorado River Salinity Control. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Wetlands and Floodplains. In addition to Management Actions Common to All Alternatives (Section 2.2), additional protection measures would be implemented to protect the ecological integrity of the dunal ponds and other ecologically important ephemeral wetlands not covered under Section 404 of the Clean Water Act.

Riparian Management Exclosures. In addition to Management Actions Common to All Alternatives (Section 2.2), existing riparian exclosures would be maintained, and new exclosures would be considered only if they benefit preservation of sensitive resources.

Fluid Mineral Wells. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Aquifer Recharge Areas. Similar to the No Action Alternative, aquifer recharge areas would be managed to maintain or enhance recharge volume and ground water quality by limiting road density and surface occupancy to maintain a healthy recharge area. In addition, studies would be conducted to better define aquifer recharge area boundaries.

2.5.2.4 Wild Horses Management

Wild Horse Herd Management Area Boundaries and Appropriate Management Levels. The Great Divide Basin HMA boundaries would be modified to exclude the JMH CAP planning area. The AML would be maintained at 415 to 600 horses.

Activity and Monitoring Plans. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Water Developments. Water developments would not be constructed for wild horse management.

Gathering Plan. A gathering plan would be developed and implemented to remove wild horses from the JMH CAP planning area.

Public Education. Opportunities for public education and enjoyment of wild horses would not be provided in the JMH CAP planning area.

2.5.2.5 Livestock Grazing Management

Guidelines for Livestock Grazing Management. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Rangeland and Riparian Habitat. In addition to Management Actions Common to All Alternatives (Section 2.2), grazing management systems (AMP) would assist in improving or maintaining the desired range condition. Approved AMPs, or other activity plans intended to serve as the functional equivalent to an AMP, for each of the designated grazing allotments would provide the necessary guidance for achieving grazing management objectives. Livestock grazing allotments that do not meet the standards would implement appropriate actions (as determined by an interdisciplinary team) if livestock grazing were found to be a factor in not meeting the standards. BLM staff would work with livestock operators to determine the most appropriate methods for achieving the standards. Modified turnout dates would be the primary methods for meeting the standards.

Forage Utilization Levels. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Livestock Water Developments and Range Improvements. Similar to the No Action Alternative, livestock water developments and range improvements would be considered to maintain or improve resource conditions and/or enhance livestock distribution. Compatibility with special status plant species would be required. Livestock water developments and range improvements proposed in sensitive wildlife habitat would be considered only if the habitat and resource conditions are improved.

Salt or Mineral Supplements. Salt or mineral supplements would not be allowed within ½ mile of riparian habitat, National Historic and Scenic Trails, areas inhabited by special status plant species, or other sensitive resource areas.

2.5.2.6 Vegetation Management

Special Status Plant Species. In addition to Management Actions Common to All Alternatives (Section 2.2), specific management actions related to known locations of special status species habitat include closing locations to surface disturbing activities or any disruptive activity that could adversely affect the plants or their habitat, as well as closing locations of special status species to the location of new mining claims; mineral material sales; OHV use, including vehicles used for geophysical exploration activities and surveying; and the use of explosives and blasting. Surface disturbing activities would be prohibited in special status plant species potential habitat areas.

Rights-of-Way Limitations. Actual plant locations and/or potential habitat of Wyoming BLM sensitive plant species would be right-of-way exclusion areas (Map 27). Exceptions to this exclusion would not be considered.

Fire Suppression. Fire suppression activities would also be limited within special status plant species habitat as described in Management Actions Common to All Alternatives (Section 2.2).

Threatened and Endangered Plant Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Invasive Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Forest and Woodland Health. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.5.2.7 Wildlife Habitat Management

Habitat Management Plan. A Habitat Management Plan would be prepared for the entire JMH CAP planning area under Alternative 2, instead of on an as-needed basis as described for the No Action Alternative. The habitat management plan would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives.

Water Developments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Special Status Wildlife Species. Same as described in the No Action Alternative (Section 2.3).

Sensitive Habitat. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Predator Damage Control. Proposed animal damage control activities not compatible with BLM planning and management prescriptions or objectives for other resource activities and users would be identified on a case-by-case basis. BLM would determine appropriate planning strategies, with input from APHIS-WS. The planning area would be designated a Restricted Control Area, which is a public land area where predator damage management may be planned, but control activities may be limited to certain methods or times of the year. Lethal animal damage control would be allowed only if it were a benefit to wildlife; nonlethal animal damage control would be allowed for livestock protection.

Greater Sage-Grouse Leks, Nesting, and Early Brood-Rearing Habitat. Greater sage-grouse concentration areas (leks and nesting habitat) would be NSO areas or closed to permanent structures and disruptive activities under this alternative. Disruptive activities would avoid these areas 24 hours a day during the strutting, nesting and brood-rearing periods. Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within greater sage-grouse concentration areas on an as-needed basis.

Greater Sage-Grouse Winter Range. Limitations on surface disturbing activities for this alternative include NSO and CSU requirements, and seasonal limitations (Map 28). The seasonal limitations for wildlife are shown in Table 2-3. Greater sage-grouse winter range would be NSO areas or closed to permanent structures and disruptive activities under this alternative.

All Greater Sage-Grouse Habitats (Leks, Nesting, Early Brood-Rearing, and Winter Range). Avoidance areas may vary depending on natural topographic barriers, terrain, vegetation structure and cover, type of activity, line of sight distance, habitat needs, etc.

Big Game Winter Range. The seasonal limitations for big game are shown in Table 2-3 and on Map 28. In addition to the No Action Alternative, vegetative character of big game (elk, deer, and antelope) crucial habitat would be restored on a case-by-case basis using BLM reclamation and monitoring practices (Appendix 9).

Big Game Birthing Areas. Big game birthing areas would be areas of NSO or closed to permanent structures and disruptive activities under this alternative (Map 28, Table 2-3). Vegetative character of big game birthing areas would be restored on a case-by-case basis using BLM reclamation and monitoring practices (Appendix 9).

Black-Footed Ferret. In addition to Management Actions Common to All Alternatives (Section 2.2), BLM would cooperate with USFWS and WGFD on any black-footed ferret reintroduction study within the planning area. Surveys for the black-footed ferret would be conducted according to USFWS current protocol. Measures would also be taken, as appropriate, to reduce potential raptor perches in and around prairie dog towns and colonies.

Mountain Plover. Mountain plover surveys would be conducted consistent with protocol described in the No Action Alternative, and additional actions would be taken to reduce impacts to the mountain plover, such as limiting traffic speeds and hunting perches. Active mountain plover nesting aggregation areas (Map 17) would be avoidance areas for surface disturbing and disruptive activities within ¼ mile of the area from April 10 to July 10.

Traffic speeds on BLM roads during the brood-rearing period (June and July) would be limited within ¼ mile of nesting concentration areas. Exceptions or other mitigation measures could be applied on a case-by-case basis, as determined by BLM in coordination with commodity users.

Measures (i.e., avoidance, burying power lines, installation of antiperch devices and exclusion for artificial nest structures) would be taken to limit hunting perches or nest sites for avian predators within ¼ mile of nesting concentration areas.

Game Fish and Special Status Fish Species. Same as described in the No Action Alternative (Section 2.3).

Raptor Nesting Sites. In addition to the No Action Alternative, raptor nesting sites would be NSO areas or closed to permanent structures and disruptive activities under this alternative (Map 28, Table 2-3). Permanent or high-profile structures would be prohibited within ½ to 1 mile of active raptor nests. Disruptive activity restrictions within the specified distance (usually a ½- to 1-mile radius) of occupied raptor nests would be applied year-round.

Introduction and Reintroduction of Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.5.3 Heritage Resources Management

Heritage Resources Protection. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Protection of Scientific Values. In addition to Management Actions Common to All Alternatives (Section 2.2), an appropriate level of inventory and analysis of all surface disturbing activities would be conducted to determine the potential effect of the activity on heritage resource, similar to the No Action Alternative. The Finley, Krmpotich, and Eden-Farson archaeological sites and the paleosol deposition area have been identified as important heritage resource sites. These sites would be managed to protect their scientific value. The Finley Site would be nominated to the NRHP under the Register's History of American Archaeology context and Earliest Americans context. The Krmpotich Site would be nominated under the Register's Earliest Americans context. The confidential locations of the Finley, Krmpotich, and Eden-Farson archaeological sites would be maintained, but interpretive information would be developed and made available at the RSFO.

The boundaries of the Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area. The paleosol deposition area of the expanded ACEC would be evaluated and managed as an RNA. Surface disturbing activities would not be allowed other than for research purposes.

National Register Eligible Sites. All National Register-eligible historic sites would continue to be protected through provisions of the NHPA and would be nominated for inclusion in the NRHP. Sites eligible for inclusion in the NRHP under Criterion D would be surrounded by a 300-foot avoidance area. BLM would require development proponents to fund preparation of NRHP nominations on a case-by-case basis.

Native American Sites. In addition to Management Actions Common to All Alternatives (Section 2.2), the Indian Gap Trail would be researched and mapped, and an interpretive plan for the trail would be developed. Similar to the No Action Alternative, surface-disturbing and disruptive activities would be prohibited within a specified distance, but not less than 100 feet, of these and other Native American respected places. Native American tribal leaders would be consulted before authorization of activities that could disrupt or disturb respected places. Appropriate viewshed management areas associated with these sites would be determined through site- and activity-specific consultations with Native American representatives, SHPO, and the development proponent. Viewshed management goals would correspond with existing VRM classification. This may necessitate limiting, or mitigating the visibility of permanent intrusions generally within a 270-degree radius from the identified respected place to the prominent landscape features.

The Indian Gap Trail would be researched and mapped and a trail interpretive plan would be developed.

Expansion Era Roads and Associated Sites. Expansion era roads and associated sites have been identified and would continue to be protected under provisions of the NHPA. Eligible sites would be nominated for listing in the NRHP. Surface disturbing activities would be limited within ¼ mile of nominated sites so as not to affect their eligibility status for the NRHP.

Historic Livestock Management Sites. Numerous livestock tending campsites and other minor pastoral agriculture-related sites have been identified throughout the JMH CAP planning area. Some of these sites may be eligible for inclusion in the NRHP within the context of the development of pastoral agriculture in Wyoming and the Rocky Mountain region and would continue to be protected under provisions of the NHPA. Surface disturbance would be limited within a minimum area of 300 feet at identified sites determined eligible for the NRHP.

Native and Euro-American Sites. Historic and archaeological sites within the context of early contact between Native Americans and Euro-American peoples have been identified and understood in general terms. Detailed historical context would be determined through consultation with Native American tribal leaders, and an interpretive program would be developed and implemented. The importance of these sites would continue to be recognized through nomination to the NRHP and/or inclusion in the Backcountry Byways program.

Paleontological Sites. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Unique Geologic Features. Management of Boars Tusk and the surrounding area would be the same as described in the No Action Alternative.

The Pinnacles Geographic Area (about 8,900 acres) would be an exclusion area for rights-of-way and a VRM Class I. The area within a ½ mile of the Pinnacles Geologic Feature, and including the features, would be closed to vehicular travel.

Tri-Territory Marker. Management would be the same as described in the No Action Alternative.

2.5.4 Travel, Access, and Realty Management

Transportation Planning. A transportation plan for the JMH CAP planning area would be developed in coordination with local governments and users. Transportation planning would provide for appropriate access routes to provide maximum protection for crucial habitats and sensitive resources. The transportation plan could include mitigation measures (such as offsite placement of facilities, remote control monitoring, restricted or prohibited surface use including road construction, multiple wells from a single pad, central tank batteries/facilities, pipelines and power lines concentrated in specific areas, based on site-specific analysis) in areas subject to seasonal limitations, CSU, and NSO stipulations. Transportation planning would include coordination with local governments, stakeholders and other publics.

Transportation planning would consider—

- Limiting points of access for all activities to minimize disruption.

- Closing and rehabilitating unused roads and trails and those causing resource damage. This would be subject to county review of existing right-of-way needs. The transportation plan and affected maps would be corrected to reflect closed roads and trails.
- Avoiding construction of stream or riparian area crossings in sensitive areas, and closure of unnecessary crossings. Exceptions may be granted if crossings would reduce adverse effects, benefit area objectives, and reduce miles of road and/or frequency of use. Bridges (versus culverts) would be required for perennial stream crossings.
- Limiting development zones to be accessed by designated routes.

Travel Management Plan. In conjunction with the overall transportation planning for JMH, travel management plans (Map 29) would be developed for the Steamboat Mountain, White Mountain, the two northern calving areas, and Essex Mountain to control access in these areas.

Road Installations. Proposed road installations and improvements would follow the Green River RMP management objectives and applicable BLM guidelines until a JMH transportation plan is prepared and approved. Exceptions to the plan would be evaluated only if beneficial to natural and cultural resource values. Proposed roads and improvements for Steamboat Mountain and White Mountain would follow the guidelines specified in Appendix 12.

Geophysical Activities. Geophysical activities would be required to conform to the OHV use designations of the Green River RMP for those portions of the planning area outside of areas with NSO requirements, WSAs, ACECs, and other sensitive resource areas.

Geophysical and related detonation activities would be excluded from areas with NSO requirements, WSAs, ACECs, and other sensitive resource areas. Seasonal limitations would apply.

Rights-of-Way. Areas would be designated as right-of-way avoidance or exclusion areas based on the location of specific sensitive resources (Map 27).

Linear Rights-of-Way. Utility and transportation corridors to accommodate major linear rights-of-way needs would be established to coincide with existing roads, trails, and right-of-way easements that do not create a safety hazard or conflict with other resource objectives.

Winter Access. Winter access would be limited to specific roads identified for winter use. Where winter access on roads other than those identified for winter access in the transportation plan is necessary, routes would be determined on a case-by-case basis. Plowing of roads would be allowed for emergencies only.

OHV Management. Public lands in the JMH CAP planning area would remain open, limited, or closed (Map 30). The OHV management prescriptions would limit access to designated roads and trails and implement seasonal closures in big game crucial habitat. WSAs and specific sensitive resource areas would be closed, but the Greater Sand Dunes Recreation Area would remain open. Exceptions to OHV use may be granted in closed areas for scientific purposes or emergency access needs.

Over-the-Snow Vehicles. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Land Withdrawals and Exchanges. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Ownership Adjustments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Access. Access to public, state, and private land would be provided throughout the planning area and would be restricted only where necessary to protect public health and safety and to protect sensitive resources. Access would be guaranteed across public lands to landlocked private and state lands consistent with the guidelines and objectives set down in FLPMA. In addition to the No Action Alternative, access would be additionally restricted using a variety of strategies and measures.

2.5.5 Recreation Resources Management

Management of recreation resources would allow for passive and active use of the planning area while maximizing the protection of environmental resources and the health and safety of users. Emphasis would be placed on the primitive experience for visitors, with less disruption of resources and more restrictions within the planning area through limiting OHV use.

Backcountry Byways. More visitor information and interpretive services would be provided to enhance the visitor experience. Recreation project plans would be developed for the Backcountry Byways program (Tri-Territory Loop and Red Desert) and would include interpretive and directional signs. The location of these signs would be coordinated with state and local governments and other interested parties for the Red Desert view point from the dugway of Steamboat Mountain, Chicken Springs overlook, Steamboat Mountain, Oregon Buttes, Honeycomb Buttes, and Indian Gap.

Greater Sand Dunes Recreation Area. The parking area and camping facilities at the Greater Sand Dunes Recreation Area would be maintained in their current condition. To avoid conflicts with fluid minerals development on existing leases and to protect the health and safety of users, the recreation area would not be expanded or improved to accommodate additional users, similar to Alternative 1.

Recreation Project Plans. Recreation project plans and interpretive prospectuses would be prepared similar to Management Actions Common to All Alternatives (Section 2.2), except that plans and prospectuses would also be prepared for Native American sites, including Indian Gap.

Camping. Specific areas would be designated for camping use to protect certain resources, such as sensitive plant species, riparian areas, greater sage-grouse leks, mountain plover aggregation areas, and big game birthing areas. To monitor resource use and impact and to minimize disturbance during sensitive seasonal periods, parties of five or more would require a group camping permit and would stay within designated group camping areas.

Special Recreation Use Permits. Special recreation use permits for managed activities that would occur in the JMH CAP planning area would be issued and renewed, and fees would be collected through the RSFO. This would allow the RSFO to track the amount, location, and timing of organized activity occurring within the planning area to monitor resource pressure. Permit fees would be available for program development. The permit evaluation process would consider the nature of the event, potential impacts to resources, conflicts with other events, and impacts to the quality of other visitors' experiences. Mitigation measures necessary to protect the resources would be included in any permit issued. A Plan of Operation would be required for all commercial recreational operators and outfitters. The plan would describe the type, extent, and location of the recreation use and the mechanisms by which the operator/outfitter would prevent impacts to environmental resources. Any requests in special recreation use permit applications to remove natural resources would be evaluated on a case-by-case basis after an environmental analysis process.

Recreational Mining and Other Similar Activity. The planning area would be withdrawn from all mineral location and mining claims. Recreational mining and other similar activity would be prohibited in the planning area.

Continental Peak/South Pass Connecting Side Trail. The Continental Peak/South Pass Connecting Side Trail would be managed as a side trail to the existing Continental Divide National Scenic Trail (CDNST). Management would be as described for the CDNST (BLM 1999). Existing primitive two-track roads, BLM roads that provide legal public access through certain private lands, segments of cross-country travel on BLM-administered public land, and an existing trail would be used as components of the CDNST. The existing primitive two-track roads and BLM road segments would continue to be open to motorized use. Cross-country travel routes would not be open to motorized use.

2.5.6 Minerals and Alternative Energy Resources Management

This alternative would close sensitive resource areas to new leasing and development. Consideration would be given to allowing extraction of viable resources on leases held by production until economic reserves are recovered. Development could be allowed in other areas.

2.5.6.1 Leasable Fluid Minerals Management

Oil and Gas Leases. In addition to Management Actions Common to All Alternatives (Section 2.2), suspended leases in the planning area would be reinstated and APDs considered consistent with existing lease stipulations. New leases would be offered only in nonsensitive resource areas. Sensitive resource areas, which include the core area, would be closed to subsequent lease offerings (Map 31).

Purchase or exchange of existing leases would be negotiated with willing leaseholders in areas that would be closed to leasing for protection of sensitive resources. Areas that would be closed to leasing include the core area, connectivity area, crucial wildlife habitat, and other sensitive resources. Funding would be pursued to buy out and exchange leases in sensitive resource areas where leaseholders would be willing to be compensated for their valid existing rights. Where existing leases in sensitive resource areas could not be exchanged, development of existing leases could continue. Upon expiration, previously leased parts of sensitive resource areas would not be offered for lease in subsequent sales. For exchanged or purchased leases, leaseholders would complete required reclamation of existing surface structures, pipelines, and oil and gas service roads to return sensitive areas to their predevelopment state, to the degree practicable.

Lease Stipulations. The lease stipulations notify the leaseholder that development activities may be limited, prohibited, or implemented, with mitigation measures to protect specific resources (Table 2-2).

Drilling Permits. Similar to the No Action Alternative, the APDs for new wells would be issued in compliance with existing lease stipulations for resource protection and 43 CFR 3100 regulations (Appendix 14). Mitigation requirements, such as seasonal restrictions on drilling, may be required as a result of a site-specific analysis. Stipulations on existing leases could be excepted where site-specific analyses do not identify the presence of the resource of concern addressed by the stipulation (Appendix 4). For existing leases with current standard stipulations, exceptions would be allowed when site-specific analyses show that no unacceptable impacts to sensitive resources would occur. In addition, refer to Section 2.5.4 for additional mitigation measures that may apply as part of the transportation plan.

2.5.6.2 Leasable Solid Minerals Management

Exploration. The planning area would be closed to coal and sodium exploration (Map 32).

Leasing. Federal coal lands within the Coal Occurrence and Development Potential Area would be closed for coal leasing and development under the Federal Coal Management Program to protect other resource values in the planning area (Map 33). Because there are no existing coal leases in the JMH, there are no valid existing rights that would have to be recognized in closing the area.

2.5.6.3 Locatable Minerals Management

Locatable Mineral Withdrawals. The planning area would be withdrawn from filing of mineral claims and exploration and development activities, including recreational use mining activity, to protect other resource values (Map 34). Existing claims would be reviewed for validity and economic feasibility, and those found to be valid could be developed. Development on valid existing claims would be allowed consistent with regulations in 43 CFR 3809, and mining activity would be required to comply with other applicable regulations, including limitations on air and water discharges, waste management, spill prevention, and endangered species.

2.5.6.4 Salable Minerals Management

Mineral Material Sales. The planning area would be closed to mineral material sales to protect other resources (Map 35). Extraction of salable minerals would be allowed as required to meet other planning objectives, such as maintenance of existing roads in the approved transportation plan. Mining and reclamation plans would be required for each use of salable mineral materials.

2.5.6.5 Alternative Energy Management

Alternative Energy Proposals. The planning area would be closed to alternative energy development projects to ensure protection of other resource values. Realty actions such as permits or leases for alternative energy proposals would not be approved.

2.5.7 Visual Resources Management

The planning area would be managed to maintain or improve scenic quality by managing the impacts of human activities and other intrusions on the visual landscape (Map 36). The VRM classes provide the design standards for all surface disturbing projects. Projects would be designed, sited, screened, or painted to reduce visual impacts regardless of the VRM classification.

VRM Class I Areas. In addition to Management Actions Common to All Alternatives (Section 2.2), all ACECs (which includes expansion areas), Indian Gap, unique geologic features, and landforms including Boars Tusk (plus a 1-mile buffer), Pinnacles Geographic Area, Freighter Gap, portions of White Mountain, and the portion of the Red Desert Watershed within the planning area would be managed as VRM Class I areas.

VRM Class II Areas. Management actions on lands classified as VRM Class II would be designed for blending into the natural landscape. A low level of change would be acceptable to the characteristic landscapes of Split Rock. All sensitive habitat areas, riparian zones, water sources, floodplains, and recreation areas would also be managed as VRM Class II. The Continental Peak/South Pass Connecting Side Trail would also be managed as VRM Class II areas. Surface disturbing activities could be seen in these areas but would not attract the attention of the casual observer.

VRM Class III Areas. Management actions on lands classified as VRM Class III would be designed to partially retain the existing character of the landscape and would allow a moderate level of change. The remainder of the planning area not managed as VRM Class I or II would be managed as Class III.

Surface disturbing activities could attract attention but would not dominate the view of the casual observer.

VRM Class IV Areas. There would be no lands within the planning area classified as VRM Class IV.

2.5.8 Management of Special Management Areas and Other Management Areas

Special management areas would continue to be managed to preserve and protect the integrity and character of the specific areas in accordance with ACEC policies and WSA interim management policies. Other resources and locations throughout the planning area that would be worthy of special protections would be designated as special management areas (Map 37).

2.5.8.1 Special Management Areas

2.5.8.1.1 Wilderness Study Areas

Geophysical Activities. Geophysical exploration and related detonation activities would be prohibited.

Rights-of-Way. These areas would be managed as right-of-way exclusion areas.

Locatable Minerals. Withdrawals from mineral location would be pursued in these areas.

2.5.8.1.2 Oregon Buttes ACEC

Geophysical Activities. Geophysical activities and related detonation activities would be prohibited in the ACEC.

Rights-of-Way. The ACEC would be managed as a right-of-way exclusion area.

Recreation. Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Oregon Buttes.

A recreation project plan and interpretive prospectus would be prepared and implemented for Oregon Buttes.

Locatable Minerals. Withdrawals from mineral location would be pursued in the ACEC as well as the entire planning area.

2.5.8.1.3 South Pass Historic Landscape ACEC

Rights-of-Way. The South Pass Historic Landscape ACEC (visible portion) would be managed as a right-of-way exclusion area. South Pass Historic Landscape ACEC (nonvisible portion) would be managed as a right-of-way avoidance area.

OHV Use. OHV use within the South Pass Historic Landscape ACEC (visible portion) would be limited to designated roads and trails. OHV use within the nonvisible portion would be limited to existing roads and trails.

Leasable Fluid Minerals. The entire South Pass Historic Landscape ACEC would be closed to fluid minerals leasing.

Leasable Solid Minerals. The entire South Pass Historic Landscape ACEC would be closed to leasable solid minerals exploration and leasing.

Locatable Minerals. Withdrawals from mineral location would be pursued in the entire South Pass Historic Landscape ACEC.

VRM. The ACEC would be managed as a VRM Class I area.

The South Pass Historic Landscape viewshed would be expanded to approximately 5 miles of the Oregon, Mormon, California, and Pony Express trail routes. Intrusions within the viewshed area could be allowed provided the results of a visual analysis indicate they are not visible from the trail routes or that they can be mitigated.

2.5.8.1.4 White Mountain Petroglyphs ACEC

Recreation. A recreation plan and interpretive prospectus would be prepared and implemented.

Leasable Fluid Minerals. The ACEC would be closed to fluid minerals leasing.

Leasable Solid Minerals. White Mountain Petroglyphs vista would be closed to coal and sodium exploration.

VRM. The ACEC would be would be managed as a VRM Class I area.

2.5.8.1.5 Steamboat Mountain ACEC

Steamboat Mountain ACEC would be expanded to include the area of highest concentration and overlap of big game habitat features, natural systems, and cultural values. These include the largest portion of elk crucial winter range and birthing area overlap, a portion of the sand dunes stabilized by the basin big sagebrush/lemon scurfpea plant community, and the Native American respected places of Indian Gap and portions of the Indian Gap Trail (Map 37).

The basin big sagebrush/lemon scurfpea vegetation community would be further evaluated as a research natural area and designated as if the criteria are met (Map 37).

Rights-of-Way. The ACEC would be managed as a right-of-way exclusion area.

Communication Sites. Communication sites would be prohibited in Steamboat Mountain ACEC.

OHV Use. OHV use would be limited to existing roads and trails.

Recreation. Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Steamboat Mountain.

A recreation plan and interpretive prospectus would be prepared and implemented for Steamboat Mountain.

Leasable Fluid Minerals. The ACEC would be closed to fluid minerals leasing consideration.

Leasable Solid Minerals. The ACEC would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. The ACEC would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued in the ACEC.

VRM. The ACEC would be managed as a VRM Class I area.

2.5.8.1.6 Greater Sand Dunes ACEC

The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area (Map 37). The expansion area would be managed as a research natural area (RNA).

The portion of the ACEC within the WSA containing the dunal ponds (flockets) would be further evaluated as a research natural area and designated as such if the criteria are met (Map 37).

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area (within 1 mile or the visual horizon, whichever is closer). The expansion area of ACEC (paleosol deposition area) would be managed as a right of way exclusion area.

OHV Use. The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to designated roads and trails.

Leasable Fluid Minerals. The ACEC would be closed to fluid mineral leasing.

Leasable Solid Minerals. The ACEC would be closed to leasable solid minerals exploration and leasing.

Locatable Minerals. Withdrawals from mineral location would be pursued in the ACEC.

VRM. The ACEC would be managed as a VRM Class I area.

2.5.8.1.7 Special Status Plant Species ACEC

The Special Status Plant Species ACEC would be expanded into the JMH CAP area where such species are located (Map 37).

The Special Status Plant Species ACEC would be expanded into the JMH CAP area where potential habitat for such species is located (Map 37).

Rights-of-Way. The ACEC would be managed as a right-of-way exclusion area.

OHV Use. The ACEC would be closed to OHV use.

Leasable Minerals. The ACEC would be closed to all mineral leasing.

Leasable Solid Minerals. The ACEC would be closed to coal and sodium exploration.

Salable Minerals. The ACEC would be closed to mineral material sales.

Rangeland Management. Salt or mineral supplements would not be allowed within ½ mile of areas where special status plant species occur.

Vegetation treatments would be designed to protect and conform to special status plant species.

2.5.8.1.8 Cushion Plant Community ACEC

Cushion plant communities would be designated an ACEC (Map 37).

The Cushion Plant Community ACEC would be further evaluated for designation as an RNA and designated as such if the criteria are met.

Rights-of-Way. The ACEC would be managed as an exclusion area for rights-of-way or other surface disturbing activities.

Leasable Solid Minerals. The ACEC would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. The ACEC would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued in the ACEC.

2.5.8.2 Other Management Areas

2.5.8.2.1 Pinnacles Geologic Feature

The Pinnacles Geologic Feature would be designated an ACEC.

Rights-of-Way. The area would be managed as a right-of-way exclusion area.

OHV Use. The area would be closed to OHV use.

Leasable Fluid Minerals. The area would be closed to fluid minerals leasing.

Leasable Solid Minerals. The area would be closed to leasable solid minerals exploration.

Salable Minerals. The area would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued.

VRM. The area would be managed as a VRM Class I area.

2.5.8.2.2 Pinnacles Geographic Area

Rights-of-Way. The area would be managed as a right-of-way exclusion area.

OHV Use. The area would be closed to OHV use.

Leasable Fluid Minerals. The area would be closed to fluid minerals leasing.

Leasable Solid Minerals. The area would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. The area would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued.

VRM. The area would be managed as a VRM Class I.

2.5.8.2.3 Red Desert Watershed Management Area

Leasable Fluid Minerals. The area would be closed to fluid minerals leasing.

VRM. The area would be managed as a VRM Class I area.

2.6 ALTERNATIVE 3

Alternative 3 provides opportunities to use and develop the planning area while ensuring resource protection. The alternative would allow development and activities to occur throughout the planning area provided sensitive resources are protected and mitigation requirements are met. Mitigation requirements necessary to ensure the stability of the sensitive resource indicators would be determined through an adaptive management approach to resource use and protection.

2.6.1 Management Actions Common to All Resource or Land Use Programs

Monitoring Plan. An interdisciplinary monitoring plan would be developed to evaluate the overall effectiveness of implementing the management decisions for the planning area. Site-specific monitoring plans would be developed for project proposals.

Resource indicators, developed as part of an interdisciplinary monitoring plan, would be used for determining the effects of all activities on sensitive resources, with emphasis on wildlife and wildlife habitat. Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of nonnative species, and recreation activities. Monitoring data would be assessed and response actions would be determined by an interdisciplinary BLM team with input from stakeholders and other publics. Timing and sequencing for approving all actions and use authorizations would be imposed if indicators show unacceptable effects on sensitive resources.

2.6.2 Land and Water Resources Management

2.6.2.1 General Management Actions for Land and Water Resources

Healthy Rangelands. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Proper Functioning Condition. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Desired Plant Community. In addition to Management Actions Common to All Alternatives (Section 2.2), DPC objectives for upland and riparian areas would be established for the planning area through individual site-specific activity and implementation planning, and as updated ecological site inventory data becomes available. DPC objectives would emphasize wildlife habitat, livestock grazing, watershed, and biodiversity values while maintaining or enhancing habitat for special status species.

Vegetation Treatments. Similar to the No Action Alternative, vegetation treatments would be designed on a case-by-case basis. Such activities may include seeding, reseeding, fence construction, weed control, water development, and enhancement of fish and wildlife habitat. Vegetation treatments would be used to abate, alter, or transform vegetation communities in an effort to achieve DPC objectives, protect water quality, dissipate erosion, and conform to requirements to protect special status plant species and associated habitats (Appendix 6). This may include activities such as manual or mechanical manipulation, chemical treatments, and prescribed burns (Appendix 8). Prescribed burns would be the preferred method of vegetation manipulation to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species. Low-intensity burns during periods of high soil moisture would be the preferred method/times in mountain shrub communities. Prescribed burns would be restricted in areas with surface coal or other fossil fuel outcrops. All vegetation treatments would be irregular in shape for edge effect, cover, and visual aesthetics.

Areas proposed for treatment with prescribed burns would be rested 1 full year prior to treatment (unless vegetation cover prior to burning has adequate fine fuels to carry the fire) and 24 months after treatment. Treatments in aspen communities would be fenced on a case-by-case basis.

Fences. Fences on public lands would be removed, modified, or reconstructed where documented wildlife conflicts with fencing occur. Herding control of livestock would be encouraged as an alternative to fencing. Similar to the No Action Alternative, fence construction would be in accordance with BLM design standards and located so as not to overly impede wildlife or wild horse movement.

Watershed Health Assessments. Same as described for Management Actions Common to All Alternatives (Section 2.2).

Native Vegetation. Same as described in the No Action Alternative (Section 2.3).

2.6.2.2 Fire Management

Fire Management Implementation Plan. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Fire Suppression. Similar to the No Action Alternative, full fire suppression for basin big sagebrush/lemon scurfpea vegetation associations would be applied.

2.6.2.3 Water Resources Management

Water Quality. In addition to Management Actions Common to All Alternatives (Section 2.2), the area within 500 feet to ¼ mile of wetlands, riparian areas, and 100-year floodplains would be avoidance areas for surface disturbing activities. The appropriate distance would be determined on a case-by-case basis. Surface disturbing activities could be permitted within avoidance areas, provided that a mitigation plan is approved and a site-specific analysis determines that adverse impacts would not occur as a result of the activity, similar to the No Action Alternative.

Permanent Facilities. Permanent facilities, such as storage tanks and structure pits, would not be allowed in 100-year floodplains, wetlands, and riparian areas, but structures that would enhance the protection and management of these areas would be considered. Proposals for linear crossings in these areas would be considered on a case-by-case basis.

Erosion Control. Same as described for the No Action Alternative (Section 2.3).

Colorado River Salinity Control. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Wetlands and Floodplains. Wetlands and floodplains would be managed in accordance with Executive Orders 11988 and 11990 and section 404 of the Clean Water Act. Specific actions would be implemented to protect the ecological integrity of the dunal ponds and other ecologically important ephemeral wetlands not covered under section 404 of the Clean Water Act, similar to Alternative 2.

Riparian Management Exclosures. Same as described in the No Action Alternative (Section 2.3).

Fluid Mineral Wells. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Aquifer Recharge Areas. Aquifer recharge areas would be managed to maintain or enhance recharge volume and ground water quality by limiting road density and surface occupancy to maintain a healthy recharge area. Studies would be conducted in relation to specific projects on a case-by-case basis to better define aquifer recharge area boundaries.

2.6.2.4 Wild Horses Management

Wild Horse Herd Management Area Boundaries and Appropriate Management Levels. The Great Divide Basin HMA would be expanded to include the entire JMH CAP planning area (Map 38). The appropriate management level would be maintained at 415 to 600 horses, but no more than 100 horses of the AML would be allowed in the expansion area.

Activity and Monitoring Plans. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Water Developments. Water developments would be provided as needed to improve wild horse herd distribution and manage forage utilization. Water developments within sensitive wildlife habitats would be considered only if wildlife habitat and resource conditions are improved or maintained.

Gathering Plan. Same as described in the No Action Alternative (Section 2.3).

Public Education. Same as described in the No Action Alternative (Section 2.3).

2.6.2.5 Livestock Grazing Management

Guidelines for Livestock Grazing Management. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Rangeland and Riparian Habitat. Same as described in the No Action Alternative (Section 2.3).

Forage Utilization Levels. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Livestock Water Developments and Range Improvements. Similar to the No Action Alternative, livestock water developments and range improvements would be considered to maintain or improve resource conditions and/or enhance livestock distribution. Compatibility with special status plant species would be required. Water developments or range improvements proposed in sensitive wildlife habitat would be considered only if wildlife habitat and resource conditions are maintained or improved.

Salt or Mineral Supplements. Salt or mineral supplements would not be allowed within ¼ mile of riparian habitat, National Historic and Scenic Trails, areas inhabited by special status plant species, or other sensitive resource areas, unless analysis shows that watershed, riparian, and wildlife values, or the integrity of trails, would not be adversely affected.

2.6.2.6 Vegetation Management

Special Status Plant Species. Similar to the No Action Alternative, specific management actions related to known locations of special status species habitat include closing locations to surface disturbing activities or any disruptive activity that could adversely affect the plants or their habitat; location of new mining claims; mineral material sales; OHV use, including those vehicles used for geophysical exploration activities and surveying; and use of explosives and blasting. Surface disturbing activities also would be prohibited in special status plant species potential habitat areas.

Rights-of-Way Limitations. Actual plant locations and/or potential habitat of Wyoming BLM sensitive plant species would be right-of-way exclusion areas. Exceptions could be considered on a case-by-case basis.

Fire Suppression. Fire suppression activities would also be limited within special status plant species habitat.

Threatened and Endangered Plant Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Invasive Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Forest and Woodland Health. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.6.2.7 Wildlife Habitat Management

Habitat Management Plan. Same as described in the No Action Alternative (Section 2.3).

Water Developments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Special Status Wildlife Species. Same as described in the No Action Alternative (Section 2.3).

Sensitive Habitat. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Predator Damage Control. The planning area would be designated a Restricted Control Area, as described in Alternative 2. Lethal animal damage control would be allowed in animal damage control for both livestock and wildlife; however, nonlethal controls would be emphasized.

Greater Sage-Grouse Leks, Nesting, and Early Brood-Rearing Habitat. NSO limitations would apply only to greater sage-grouse leks (with a ½-mile buffer). Disruptive activities would avoid occupied greater sage-grouse leks and within ½ mile of nesting and brood-rearing areas from sunset to 9:00 a.m. daily. Disruptive activities would avoid occupied greater sage-grouse leks from usually March 15 to May 15. The actual area to be avoided, usually within ¼ to ½ mile of the lek, and appropriate seasonal limitations would be determined on a case-by-case basis. Seasonal limitations on surface disturbing and disruptive activities (usually from March 15 to July 15) would apply within actual nesting and early brood-rearing habitat up to 2 miles from greater sage-grouse leks on a case-by-case basis (Map 39). Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within 2 miles from greater sage-grouse leks (Map 39) on an as-needed basis.

Greater Sage-Grouse Winter Range. Disruptive activities would be prohibited in greater sage-grouse winter range (Map 39) usually from November 15 to March 15. These areas are subject to change based on new data and scientific information.

All Greater Sage-Grouse Habitats (Leks, Nesting, Early Brood-Rearing, and Winter Range). Same as described in the No Action Alternative (Section 2.3).

Maintenance and Operational Activities in Greater Sage-Grouse Habitats. In greater sage-grouse habitats, surface disturbing maintenance and operational activities would require mitigation measures or development plans. These mitigation measures or development plans would be based on local situations on a case-by-case basis.

Big Game Winter Range. Same as described in the No Action Alternative (Section 2.3).

Big Game Birthing Areas. Same as described in the No Action Alternative (Section 2.3).

Black-Footed Ferret. In addition to the management described in the No Action Alternative, measures would be taken, as appropriate, to reduce potential raptor perches in and around prairie dog towns and colonies, as described in Alternative 1.

Mountain Plover. The mountain plover would be managed as described in Alternative 2.

Game Fish and Special Status Fish Species. Game fish and special status fish species would be managed as described in the No Action Alternative.

Raptor Nesting Sites. Raptor nesting sites would be managed as described in the No Action Alternative.

Introduction and Reintroduction of Species. Same as described in Management Actions Common to All Alternatives (Section 2.2).

2.6.3 Heritage Resources Management

Heritage Resources Protection. In addition to Management Actions Common to All Alternatives (Section 2.2), an appropriate level of inventory and analysis of all surface disturbing activities would be conducted to determine the potential effect of the activity on heritage resources, similar to the No Action Alternative.

Protection of Scientific Values. In addition to Management Actions Common to All Alternatives (Section 2.2), the Finley, Krmpotich, and Eden-Farson archaeological sites, and the paleosol deposition area, have been identified as important heritage resource sites. These sites would be managed to protect their scientific value. The confidential locations of the Finley, Krmpotich, and Eden-Farson archaeological sites would be maintained, but interpretive information would be developed and made available at the RSFO. The boundaries of the Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area. Surface disturbing activities proposed in the paleosol deposition area would be evaluated on a case-by-case basis after an archaeological inventory of the area. The heritage resource inventory would include subsurface testing by remote sensing techniques, hand-dug test excavations, mechanical testing, or other appropriate methods approved by BLM in consultation with SHPO. Mitigation may include research-oriented data recovery excavation conducted pursuant to a Data Recovery Plan approved by BLM in consultation with SHPO.

National Register Eligible Sites. All National Register-eligible historic sites would continue to be protected through provisions of the NHPA, and several high-profile sites would be nominated for inclusion in the NRHP. Project proponents would be required to fund the preparation of National Register nominations. Sites eligible for inclusion in the NRHP under Criterion D would be surrounded by a 100-foot avoidance area.

Native American Sites. Areas located in Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, Joe Hay Rim, and the Indian Gap Trail have been identified as respected places by tribal representatives. These locations may include sacred sites or traditional cultural properties and may be eligible for inclusion in the NRHP. Native American tribal leaders would be consulted prior to authorization of activities that could disrupt or disturb respected places. Surface disturbance and disruptive activities would be prohibited within a specific distance, but not less than 100 feet, of these and other Native American respected places, similar to the No Action Alternative. Appropriate viewshed management areas associated with these sites would be determined through site- and activity-specific consultations with Native American representatives, SHPO, and the development proponent. Viewshed management goals would correspond with existing VRM classification. This may necessitate limiting, or mitigating the visibility of permanent intrusions generally within a 270-degree radius from the identified respected place to the prominent landscape features.

Information would be gathered on the Indian Gap Trail, the trail would be mapped, and an interpretive plan developed.

Expansion Era Roads and Associated Sites. Expansion era roads and associated sites have been identified and would continue to be protected under provisions of the NHPA. The portion of the roads and sites that contribute to their NRHP eligibility would be nominated for listing in the NRHP. Surface disturbing activities would be limited within ¼ mile of eligible trail segments or sites.

Historic Livestock Management Sites. Numerous livestock tending campsites and other pastoral agricultural sites have been identified throughout the JMH CAP planning area. Some of these locations may be eligible for inclusion in the NRHP within the context of the development of pastoral agriculture in Wyoming and the Rocky Mountain region. These sites would continue to be protected under provisions of the NHPA. Surface disturbance would be limited within a minimum area of 100 feet at identified sites determined eligible for the NRHP.

Native and Euro-American Sites. Historic and archaeological sites within the context of early contact between Native Americans and Euro-American peoples have been identified, but they are understood only in general terms. The historical context of these sites would continue to be developed, and an interpretive program would be developed and implemented to improve public appreciation of these locations. Sites may be nominated to the NRHP and/or included in the Backcountry Byways program on a case-by-case basis.

Paleontological Sites. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Unique Geologic Features. Management of Boars Tusk and the surrounding area would be the same as described in the No Action Alternative.

The Pinnacles Geographic Area (about 8,900 acres) would be an exclusion area for rights-of-way and a VRM Class I. The area within a ½ mile of the Pinnacles Geologic Feature, and including the features, would be closed to vehicular travel.

Tri-Territory Marker. Management would be the same as described in the No Action Alternative.

2.6.4 Travel, Access, and Realty Management

Travel management, access limitations, and realty actions would be developed if protection from unacceptable impacts to sensitive resource areas were possible.

Transportation Planning. Transportation planning would provide for appropriate access routes to provide maximum protection for crucial habitats and sensitive resources. A transportation plan specific to the JMH CAP planning area would be developed in coordination with local governments and users. The transportation plan could include mitigation measures (such as offsite placement of facilities, remote control monitoring, restricted or prohibited surface use including road construction, multiple wells from a single pad, central tank batteries/facilities, pipelines and power lines concentrated in specific areas, based on site-specific analysis) in areas subject to seasonal limitations and CSU and NSO stipulations. Transportation planning would include coordination with local governments, stakeholders and other publics.

Transportation planning would consider—

- Access restrictions, such as seasonal road closures and/or gating, to limit frequency of access in crucial wildlife habitat.
- Rerouting or rehabilitating existing roads and trails causing resource damage. This would be subject to county review of existing rights-of-way needs.
- Concentrating stream and riparian area crossings in key locations to avoid disruptions. Exceptions may be granted if crossings would reduce adverse effects, benefit area objectives, and reduce miles of road (and/or frequency of use). Bridges may be required on Pacific, Jack Morrow, Parnell, and Rock Cabin creeks.
- Posting speed limits as necessary to protect wildlife and public health and safety and to meet area objectives.

Travel Management Plan. In conjunction with the overall transportation planning for JMH, a travel management plan (Map 29) would be developed for the Steamboat Mountain, White Mountain, the two northern calving areas, and Essex Mountain to control access in these areas.

Road Installations. Proposed road installations and improvements would follow the Green River RMP management objectives and applicable BLM guidelines until a JMH Transportation Plan is prepared and approved. Exceptions to the plan would address site-specific conditions so as to minimize impacts on natural and cultural resource values. Similar to Alternative 2, proposed roads and improvements for Steamboat Mountain and White Mountain would follow the guidelines specified in Appendix 12.

Geophysical Activities. Geophysical vehicular activities, including detonation activities, would be excluded from areas with NSO requirements, WSAs, ACECs, and other sensitive resource areas. Seasonal limitations would apply. Exceptions would be granted provided adequate mitigation measures could be implemented.

Rights-of-Way. Areas would be designated as right-of-way avoidance or exclusion areas based on the location of specific sensitive resources. Areas closed to surface occupancy and mineral leasing would be right-of-way exclusion areas (Map 40).

Linear Rights-of-Way. Similar to Alternative 2, utility and transportation corridors to accommodate major linear right-of-way needs would be established to coincide with existing roads, trails, and right-of-way easements.

Winter Access. Winter access would be limited to specific roads identified for winter use. Where winter access on roads other than those identified for winter access in the transportation plan is necessary, routes would be determined on a case-by-case basis in accordance with transportation planning requirements. Plowing would be allowed as needed.

OHV Management. Public lands in the JMH CAP planning area would remain open, limited, or closed (Map 41). The OHV management prescriptions would limit access to designated roads and trails in sensitive resource areas. Seasonal closures would be implemented in sensitive habitat areas. WSAs and specific sensitive resource areas would be closed, but the Greater Sand Dunes Recreation Area would remain open. Exceptions to OHV use may be granted in closed areas for scientific purposes or for emergency access needs.

Over-the-Snow Vehicles. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Land Withdrawals and Exchanges. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Ownership Adjustments. Same as described in Management Actions Common to All Alternatives (Section 2.2).

Access. Similar to the No Action Alternative, access to public, state, and private land would be provided throughout the planning area and would be restricted only where necessary to protect public health and safety and to protect sensitive resources. Access would be guaranteed across public lands to landlocked private and state lands consistent with the guidelines and objectives set down in FLPMA.

2.6.5 Recreation Resources Management

Management of recreation resources would allow for passive and active use of the planning area while maximizing the protection of environmental resources and the health and safety of users, similar to Alternative 2. Emphasis would be placed on the primitive experience for visitors, with less disruption of resources and more restrictions within the planning area, including OHV use.

Backcountry Byways. More visitor information and interpretive services would be provided to enhance the visitor experience, similar to Alternative 2. Recreation project plans would be developed for the Backcountry Byways program (Tri-Territory Loop and Red Desert) and would include interpretive and directional signs. The location of these signs would be coordinated with state and local governments and other interested parties for the Red Desert view point from dugway of Steamboat Mountain, Chicken Springs overlook, Steamboat Mountain, Oregon Buttes, Honeycomb Buttes, and Indian Gap.

Greater Sand Dunes Recreation Area. The parking area and camping facilities at the Greater Sand Dunes Recreation Area would be maintained in their current condition. To avoid conflicts with fluid minerals development on existing leases and to protect the health and safety of users, the recreation area would not be expanded or improved to accommodate additional users, similar to Alternative 1.

Recreation Project Plans. Recreation project plans and interpretive prospectuses would be prepared similar to Management Actions Common to All Alternatives (Section 2.2), except that plans and prospectuses would also be prepared for Native American sites, including Indian Gap.

Camping. Similar to Alternative 2, specific areas would be designated for camping use to protect certain resources, such as sensitive plant species, riparian areas, greater sage-grouse leks, mountain plover aggregation areas, and big game birthing areas. To monitor resource use and impact and to minimize disturbance during sensitive seasonal periods, parties of 10 or more would require a group camping permit and would stay within designated group camping areas.

Special Recreation Use Permits. Similar to Alternative 2, special recreation use permits for managed activities that would occur in the JMH CAP planning area would be issued and renewed through the RSFO. This would allow the RSFO to track the amount, location, and timing of organized activity occurring within the planning area to monitor resource pressure. Similar to the No Action Alternative, the permit evaluation process would consider the nature of the event, potential impacts to resources, conflicts with other events, and impacts to the quality of other visitors' experiences. Mitigation measures necessary to protect the resources would be included in any permit issued. A plan of operation would be required for all commercial recreational operators and outfitters. The plan would describe the type, extent, and location of the recreation use and the mechanisms by which the operator/outfitter would prevent impacts to environmental resources. Any requests in special recreation use permit applications to remove natural resources would be evaluated on a case-by-case basis after an environmental analysis process.

Recreational Mining and Other Similar Activity. Recreational mining and other similar activities would be limited to a 5-acre site located in the Dickie Springs-Oregon Gulch Placer Mining District area. A recreation site plan would be prepared and implemented to manage the site for recreational purposes.

Continental Peak/South Pass Connecting Side Trail. The Continental Peak/South Pass Connecting Side Trail would be managed the same as described in Alternative 2.

2.6.6 Minerals and Alternative Energy Resources Management

Alternative 3 would allow development as long as sensitive resources are protected from unacceptable impacts.

2.6.6.1 Leasable Fluid Minerals Management

Oil and Gas Leases. In addition to Management Actions Common to All Alternatives (Section 2.2), lease sales would be offered based on industry interest in areas available for leasing and development (Map 42). Development rates in the planning area would be controlled by offering new leases, with stipulations that give BLM the authority to time and sequence development activities. The timing and sequencing restrictions would be implemented in a manner that protects the leaseholder's contract rights, such as placing a lease in suspension until it can be developed without contributing to unacceptable impacts. This would allow interested parties to bid on leases in a systematic manner, whereby they could bid on all available areas in which they have an interest. Imposition of timing and sequencing restrictions would be based on monitoring of sensitive resource indicators that could include, but not be limited to, wildlife population trends, reproduction rates, observed ranges, and habitat integrity. An interdisciplinary team would review the monitoring data and determine acceptable levels of development activity. The timing and sequencing of development on an individual lease would include consideration of the following factors:

- Data trends for indicators of the viability of potentially impacted wildlife and other sensitive resources, including impacts on indicators from other causes, such as disease, drought, or hunting approved through wildlife management activities by BLM or other agencies
- Fragmentation of habitat and migration pathways due to preexisting development
- Net amount of surface disturbance, including approved development activities, that will be implemented in nearby areas and planned reclamation of existing surface disturbances
- Systematic development of the fluid mineral resources by the operator on individual leases and other leases within sensitive resource areas (i.e., allowing development of selected leases by an operator while other leases are held in suspension, followed by successive lease reinstatement and development as previously developed areas are reclaimed).

Lease Stipulations. The lease stipulations notify the leaseholder that development activities may be limited, prohibited, or implemented with mitigation measures to protect specific resources (Table 2-2). As described in the Oil and Gas Leases paragraph for this section, stipulations may include provisions for timing and sequencing of development activities based on monitoring of sensitive resource indicators. Emphasis would be on protection of wildlife and wildlife habitat.

Drilling Permits. In addition to Management Actions Common to All Alternatives (Section 2.2), for new leases BLM would issue COAs on APDs to implement lease stipulations. Operational requirements may include use of remote control for well operations, noise mitigation, and modification of structures for wildlife protection. For existing leases that do not contain stipulations, BLM could issue COAs that would allow necessary impacts for development to be technically feasible or economically viable. COAs for timing limitations would be based on monitoring of sensitive resource indicators, as described in the Oil and Gas Leases and Lease Stipulations paragraphs of this section. All APDs and development actions would be required to be in compliance with 43 CFR 3100. Development actions would not be permitted that did not comply with mandatory resource protection requirements, such as protection of threatened or endangered species and air and water quality regulations. In addition, refer to Section 2.6.4 for additional mitigation measures that may apply as part of the transportation plan.

2.6.6.2 Leasable Solid Minerals Management

Exploration. Most of the planning area would be open to coal exploration activities, with avoidance and mitigation requirements needed to protect the resources (Map 43). Areas closed to coal exploration activities would be similar to those specified for the No Action Alternative. In addition, the Cushion Plant Community ACEC, Pinnacles Geographic Area, Steamboat Mountain ACEC, and greater sage-grouse leks and the ½ mile surrounding them would be closed to coal exploration. The exploration activity would also be required to comply with existing standard practices, best management practices, and guidelines for surface disturbing activities (Appendices 5 and 6).

Leasing. Coal leases could be offered in the parts of the Coal Occurrence and Development Potential Area that are open to leasing, as this area has been evaluated using the 20-point suitability screening process (Map 44). Areas outside this part of the planning area may also be leased for coal development but would have to meet the suitability criteria for coal leasing. To develop a mine on a lease, a mine plan and the required permits from the Office of Surface Mining, Reclamation and Enforcement, and state and local agencies, would have to be prepared. Restrictions on mining activity, such as NSO, or subsurface mining with controls on surface facilities, would be required on coal leases where needed for resource protection. The areas with coal leasing limitations and the areas closed to coal leasing for Alternative 3 are the same as those specified in the No Action Alternative.

2.6.6.3 Locatable Minerals Management

Locatable Mineral Withdrawals. Proposed withdrawals from locatable minerals identified in the Green River RMP would be pursued (Map 45). Withdrawals from mineral location would be pursued in the northern elk calving areas, the potential diamond development area of Steamboat Mountain ACEC, and areas with NSO requirements including active raptor next sites and Indian Gap. Other withdrawals could be pursued, as necessary.

Withdrawals would be revoked for lands classified as prospectively valuable for oil shale. Upon revocation, the area would be open to the filing of mining claims, exploration, and development of locatable minerals. The White Mountain Petroglyphs ACEC and Boars Tusk, located in the oil shale classification lands, would be withdrawn from mineral location prior to the revocation.

Withdrawals would be revoked for lands classified as prospectively valuable for coal. Upon revocation, the area would be open to filing of mining claims, exploration, and development of all locatable minerals. Areas that would be withdrawn from mineral location prior to the revocation of the coal classification include Greater Sand Dunes ACEC (western portion), Crookston Ranch, public water reserves, Indian Gap, Tri-Territory Marker, and South Pass Summit. Because Alternative 3 includes designation of the Special Status Plants ACEC, this area would be withdrawn to implement protection of these plants, which would be an equivalent action to withdrawal of special status plant species sites under the No Action Alternative. Active raptor nest sites would also be pursued for withdrawal. Specific management actions would be taken to provide for recreational mining in the designated area, including removal and stockpiling of soil, and excavating material to provide access for recreational miners.

2.6.6.4 Salable Minerals Management

Mineral Material Sales. The planning area would be open to mineral material sales where required to meet planning objectives, such as construction and maintenance of roads in the approved transportation plan, construction of recreational facilities, or other construction related to approved development activities (Map 46). Mining and reclamation plans would be required for each use of salable mineral materials.

Areas currently closed to mineral material sales would remain closed, with the exception of Steamboat Mountain ACEC. The lava rock portion of Steamboat Mountain would be closed to mineral material sales, and the remainder of the ACEC would be available for salable mineral development as required to meet other planning objectives in this portion of the planning area. Areas closed to mineral materials sales under Alternative 3 would include Crookston Ranch, Oregon Buttes ACEC, Native American burial sites, Boars Tusk, White Mountain Petroglyphs, Sand Dunes ACEC, South Pass Historic Landscape ACEC and viewshed, the lava rock portion of Steamboat Mountain, Special Status Plant Species ACEC, and greater sage-grouse leks with a ½-mile buffer.

2.6.6.5 Alternative Energy Management

Alternative Energy Proposals. The planning area would be open to alternative energy development projects, such as wind or solar farms, consistent with the resource protection requirements and the transportation plan under this alternative. Permits or leases would that would allow these developments to occur would include mitigation requirements to protect sensitive resources, and would meet the location requirements for utility lines and roads required in the transportation plan. Site-specific assessments would be required to identify potential impacts from construction activity and operation noise on wildlife, heritage resources, and visual resources.

2.6.7 Visual Resources Management

The planning area would be managed to maintain or improve scenic quality by managing the impacts of human activities and other intrusions on the visual landscape (Map 47). The VRM classes provide the design standards for all surface disturbing projects. Projects would be designed, sited, screened, or painted to reduce visual impacts regardless of the VRM classification.

VRM Class I Areas. Same as described in Management Actions Common to All Alternatives (Section 2.2).

VRM Class II Areas. Management actions on lands classified as VRM Class II would be designed to blend into the natural landscape. A visual transition area of 1 mile adjacent to each WSA would be managed as Class II to retain the existing character of the WSA landscape. A low level of change would be acceptable to the characteristic landscapes of the ACECs, thus South Pass Historic Landscape, White Mountain Petroglyphs, Steamboat Mountain, Special Status Plant Species, and Cushion Plant Community ACECs, and the part of Greater Sand Dunes ACEC outside the WSA would be managed as VRM Class II. Oregon Buttes ACEC lies entirely within the WSA and thus is managed as VRM Class I. Unique geological features and landforms, including Indian Gap and Boars Tusk, Split Rock, portions of White Mountain, the western part of the Red Desert Watershed that falls in the planning area, and the contributing portion of the National Historic Trail and National Scenic Trails, would also be managed as VRM Class II. Surface disturbing activities could be seen in these areas but would not attract the attention of the casual observer.

VRM Class III Areas. Management actions on lands classified as VRM Class III would be designed to partially retain the existing character of the landscape and would allow a moderate level of change. The area known as Eden Valley would be managed as Class III. Surface disturbing activities could attract attention but would not dominate the view of the casual observer.

VRM Class IV Areas. Management actions on lands classified as VRM Class IV could result in a major modification to the existing character of the landscape. The level of change to the landscape could be high. The remainder of the planning area not managed as VRM Class I, II, or III would be managed as Class IV. Surface disturbing activities could dominate the view of the casual observer and would be the major focus of attention.

2.6.8 Management of Special Management Areas and Other Management Areas

Special management areas would continue to be managed to preserve and protect the integrity and character of the specific areas in accordance with ACEC policies and WSA interim management policies. Other resources and locations throughout the planning area that would be worthy of special protections would be designated as special management areas (Map 48).

2.6.8.1 Special Management Areas

2.6.8.1.1 Wilderness Study Areas

Geophysical Activities. Geophysical exploration and related detonation activities would be prohibited.

Rights-of-Way. These areas would be managed as right-of-way exclusion areas.

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

2.6.8.1.2 Oregon Buttes ACEC

Geophysical Activities. Geophysical activities and related detonation activities would be prohibited in Oregon Buttes ACEC.

Rights-of-Way. The ACEC would be managed as a right-of-way exclusion area.

Recreation. Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Oregon Buttes.

A recreation project plan and interpretive prospectus would be prepared and implemented for Oregon Buttes.

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

2.6.8.1.3 South Pass Historic Landscape ACEC

Rights-of-Way. The South Pass Historic Landscape ACEC (portion not visible) would be managed as a right-of-way avoidance area. The South Pass Historic Landscape ACEC (visible portion) would be managed as a right-of way exclusion area.

OHV Use. OHV use within the South Pass Historic Landscape ACEC (visible portion) would be limited to designated roads and trails. OHV use within the nonvisible portion would be limited to existing roads and trails.

Leasable Fluid Minerals. The South Pass Historic Landscape ACEC (visible portion) would be open to consideration of fluid minerals leasing with NSO requirements.

The South Pass Historic Landscape ACEC (nonvisible portion) would be open to consideration of fluid minerals leasing consideration with stipulations to protect other resources. Stipulations could include but would not be limited to NSO requirements, CSU, and timing of development activity (Map 42).

Leasable Solid Minerals. The South Pass Historic Landscape ACEC (visible portion) would be closed to leasable solid minerals exploration and leasing.

Locatable Minerals. Withdrawal from mineral location would be pursued on South Pass Summit. Withdrawal from mineral location would also be pursued for the northern elk calving areas in part of the South Pass historic Landscape ACEC.

VRM. The entire ACEC would be managed as a VRM Class II area.

The South Pass Historic Landscape ACEC viewshed would be maintained from approximately 3 miles of the Oregon, Mormon, California, and Pony Express National Historic Trail routes. Intrusions within the viewshed area could be allowed provided the results of a visual analysis indicate they are not visible from the trail routes or that they can be mitigated.

2.6.8.1.4 White Mountain Petroglyphs ACEC

Recreation. A recreation plan and interpretive prospectus would be prepared and implemented.

Leasable Fluid Minerals. The ACEC would be open to consideration of fluid minerals leasing with NSO requirements.

Leasable Solid Minerals. White Mountain Petroglyphs Vista would be closed to coal and sodium exploration.

VRM. The ACEC would be managed as VRM Class II area.

2.6.8.1.5 Steamboat Mountain ACEC

Steamboat Mountain ACEC would be expanded to include all of Indian Gap and the face of Steamboat Mountain. This would include portions of the basin big sagebrush/lemon scurfpea vegetation community (Map 48).

Rights-of-Way. The southern portion of the ACEC would be managed as a right-of-way exclusion area. The remainder of the ACEC would be managed as a right-of-way avoidance area.

Communication Sites. Communication sites would be prohibited in Steamboat Mountain ACEC.

OHV Use. OHV use would be limited to designated roads and trails.

Recreation. Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Steamboat Mountain.

A recreation plan and interpretive prospectus would be prepared and implemented for Steamboat Mountain.

Leasable Fluid Minerals. Steamboat Mountain ACEC would be open to consideration of fluid minerals leasing consideration with stipulations to protect other resources. Stipulations could include but would not be limited to NSO and CSU requirements and timing of development activity (Map 42).

Leasable Solid Minerals. The entire ACEC would be closed to solid leasable solid minerals exploration and leasing.

Salable Minerals. The lava portion of the ACEC would be closed to mineral material sales. The remainder of the ACEC would be open only when required to meet other planning objectives within the JMH CAP planning area.

Locatable Minerals. Withdrawal from mineral location would be pursued in the potential diamond development area of Steamboat Mountain ACEC.

VRM. The entire ACEC would be managed as a VRM class II area.

2.6.8.1.6 Greater Sand Dunes ACEC

The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area (Map 37).

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area.

OHV Use. The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to existing roads and trails.

Leasable Fluid Minerals. The portion of the ACEC outside the WSA would be open to consideration of fluid minerals leasing with stipulations to protect other resources. Stipulations could include but would not be limited to NSO and CSU requirements and timing of development activity (Map 42). Other portions of the ACEC would be closed to fluid mineral leasing (Map 42).

Leasable Solid Minerals. The western portion of the ACEC would be closed to leasable solid minerals exploration and leasing. The eastern portion of the ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities.

Locatable Minerals. Withdrawals from mineral location would be pursued in the western portion of the ACEC.

VRM. The ACEC would be managed as a VRM Class II area.

2.6.8.1.7 Special Status Plants ACEC

The Special Status Plant Species ACEC would be expanded into the JMH CAP area where such species are located (Map 37).

Rights-of-Way. The ACEC would be managed as a right-of-way exclusion area.

OHV Use. The ACEC would be closed to OHV use.

Leasable Minerals. The ACEC would be open to consideration for mineral leasing with NSO requirements.

Leasable Solid Minerals. The ACEC would be closed to coal and sodium exploration.

Salable Minerals. The ACEC would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued where special status plants occur.

Rangeland Management. Salt or mineral supplements would not be allowed within ¼ mile of areas where special status plant species occur.

Vegetation treatments would be designed to protect and conform to special status plant species.

2.6.8.1.8 Cushion Plant Community ACEC

Cushion plant communities would be designated an ACEC (Map 37).

Rights-of-Way. The ACEC would be managed as an avoidance area for rights-of-way or other surface disturbing activities.

Leasable Solid Minerals. The ACEC would be closed to leasable solid minerals exploration.

2.6.8.2 Other Management Areas

2.6.8.2.1 Pinnacles Geologic Feature

The Pinnacles Geologic Feature would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.

Rights-of-Way. The area would be managed as a right-of-way exclusion area.

OHV Use. The area would be closed to OHV use.

Leasable Fluid Minerals. The area would be closed to fluid minerals leasing.

Leasable Solid Minerals. The area would be closed to leasable solid minerals exploration.

Salable Minerals. The area would be closed to mineral material sales.

VRM. The area would be managed as a VRM Class I area.

2.6.8.2.2 Pinnacles Geographic Area

Rights-of-Way. The area would be managed as a right-of-way exclusion area.

OHV Use. The area would be closed to OHV use.

Leasable Fluid Minerals. The area would be closed to fluid minerals leasing.

Leasable Solid Minerals. The area would be closed to leasable solid minerals exploration.

Salable Minerals. The area would be closed to mineral material sales.

VRM. The area would be managed as a VRM Class I.

2.6.8.2.3 Red Desert Watershed Management Area

OHV Use. OHV use would be limited to designated roads and trails.

VRM. The area would be managed as a VRM Class II area.

2.7 PROPOSED JMH CAP

Parts of the Proposed JMH CAP that would amend the Green River RMP may be protested by parties who participated in the planning process and who have an interest that is or may be adversely affected by the approval of the decisions that amend the Green River RMP (43 CFR 1610.5-2). Management actions that may be protested are indicated in *underlined italics* below and in Table 2-1 under the Proposed JMH CAP. For more information on protest requirements see the Dear Reader letter at the beginning of the final EIS.

2.7.1 Management Actions Common to All Resource or Land Use Programs

The Proposed JMH CAP provides opportunities to use and develop the planning area while ensuring resource protection. The alternative would allow development and activities to occur throughout the planning area through an implementation, monitoring, and evaluation management strategy. This strategy establishes indicators to inform BLM of the adverse effects of actions within the planning area and prevents them from becoming significant through BLM's ability to control the timing and location of some development activities. The implementation, monitoring, and evaluation strategy would apply to all land and resource programs in the Proposed JMH CAP.

Monitoring Plan. An implementation, monitoring, and evaluation process, including an interdisciplinary monitoring plan, would be used to evaluate the overall effectiveness of implementing the management decisions for the planning area and used as a basis for making management adjustments.

The primary aspects of the process are an implementation strategy for the process, a monitoring plan, and a list of 12 sensitive resources and uses to help determine what, where, under what conditions, and when areas should be open to surface disturbing or disruptive activities. See Appendix 17 for a detailed description of the management strategy to be employed.

Other detailed aspects of the implementation, monitoring, and evaluation strategy include the following:

Upon completion of the JMH CAP, portions of crucial habitats and other areas of sensitive or important resources would be open to further consideration for various multiple-use activities, so long as crucial habitats and other sensitive or important resources would be protected from irreversible adverse effects. This would be accomplished through an implementation strategy that would include case-by-case review of all proposals, including a 12-point sensitive resource review criteria, application of mitigation measures to protect sensitive resources, and, where applicable, controlled location and timing of the various activities and related reclamation. For example, satisfactory reclamation of surface disturbance may be required before additional surface-disturbing activities would be allowed in big game crucial ranges, migration routes, and birthing areas. *These sensitive resources currently are—*

1. *Active (unstabilized) sand dunes*
2. *Slopes greater than 20 percent*
3. *Special management area values (visual, recreation opportunities, health and safety, cultural/historical, etc.)*
4. *Integrity of the core area wildlife habitat*
5. *Key habitat (unique vegetation and plant communities)*
6. *Key habitat (e.g., escape cover, birthing areas)*
7. *Cultural/Native American respected places, historic values*
8. *Connectivity area (migratory corridor)*
9. *Inaccessible areas (overlapping resource concerns, i.e., sensitive resources 1 to 8, above)*
10. *Special status plant and animal species*
11. *Stabilized dunes*
12. *Visual values (VRM Class I and II areas).*

Portions of the JMH CAP planning area would be closed to long-term surface disturbing and disruptive activity, rights-of-way, fencing, power lines, pipelines, long-term and permanent structures or facilities, mineral leasing, mineral exploration and development activities, rangeland improvements, land treatments, and long-term and permanent land and resource use commitments or allocations, if they would result in irreversible adverse effects. This would be done to satisfy needs for adequate wildlife habitat and use of that habitat (crucial winter range, calving/fawning, migration corridors, etc.), watershed protection, protection of other sensitive resources, and for public health and safety. These are identified as NSO areas in Table 4-8 and Map 50.

Additionally, in portions of Steamboat Mountain ACEC, Greater Sand Dunes ACEC, the White Mountain and Split Rock areas, and the core and connectivity areas, surface-disturbing and disruptive activities would be subject to extensive review and mitigation that would allow appropriate levels of activity while meeting objectives and safeguarding sensitive resources. Monitoring and evaluation would determine the effectiveness of the management prescriptions and mitigation measures. Adjustments could be made to ensure that further activity would not cause fragmentation and abandonment of habitat and would still meet stated management objectives, safeguard sensitive resources, and not result in irreversible adverse effects. This determination would be based on the effects on elk and their movement patterns and use of habitat, effects on other wildlife species and habitats, public health and safety, watershed condition, and effects on other sensitive resources.

- Portions of the planning area would be closed to oil and gas leasing and development activities (Map 54). Other surface disturbing and disruptive activities in this portion of the planning area would be reviewed on a case-by-case basis. Surface disturbing and disruptive activities such as rights-of-way, fencing, power lines, pipelines, long-term and permanent structures or facilities, rangeland improvements, land treatments, and long-term and permanent land and resource use commitments or allocations may be allowed if they would not result in irreversible adverse effects. Existing oil and gas leases in this portion of the planning area would be recognized, and exploration and development activities on these existing leases would be allowed as appropriate based on site-specific analysis. Intensive mitigation may be required, such as transportation planning; remote control of fluid mineral production facilities to limit travel; multiple-well pads to limit surface disturbances; limiting the number of pads per section in sensitive areas; use of directional drilling to minimize disturbance of sensitive areas; clustering or centrally locating ancillary facilities; shrub reclamation (containerized stock, transplanting, etc.) to restore, rehabilitate, or replace habitat; application of geotechnical material for construction; and potential unitization prior to exploration and development. Other resource projects or proposals could expect a similar in-depth consideration and may require similar mitigation measures (Table 2-2 and Appendix 17).
- Monitoring and evaluation would incorporate information from the elk study conducted in the JMH CAP planning area (see Section 3.1.6.1.3), application of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing, PFC determinations for riparian areas, and observations of impacts of activities and uses inside and outside the planning area. Appropriate mitigation would be applied to meet planning area management objectives. If it was determined that planning area management objectives were not being met, management would be adapted to address this situation.

Resource indicators, developed as part of the planning area management strategy of the implementation, monitoring, and evaluation process, would be used for determining effects of all activities on all resource values. Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of nonnative species, and recreation activities (part of the implementation, monitoring, and evaluation process). Monitoring data would be assessed and response actions would be determined by an interdisciplinary BLM team with input from stakeholders and other public entities, as part of the implementation, monitoring and evaluation process. Timing and sequencing for approving all actions and use authorizations would be applied where feasible, but could be excepted if indicators show effects on resources were within acceptable limits.

2.7.2 Land and Water Resources Management

Management Objective—The planning area would be managed to maintain or enhance land and water resources using ecological principles and science-based performance criteria.

2.7.2.1 General Management Actions for Land and Water Resources

Healthy Rangelands. The Wyoming Standards for Healthy Rangelands would apply to all resource uses on BLM-administered lands. These standards are the minimal acceptable conditions that address the health, productivity, and sustainability of the rangeland. The standards describe healthy rangelands rather than rangeland byproducts. Achievement of a standard is determined through observing, measuring, and monitoring appropriate indicators. An indicator is a component of a system whose characteristics (e.g., presence, absence, quantity, and distribution) can be observed, measured, or monitored based on sound scientific principles. The standards would direct the management of public lands and would focus the implementation of this activity plan toward the maintenance or attainment of healthy rangelands.

Proper Functioning Condition. Riparian areas would be managed to attain and/or maintain a minimum standard of PFC, which is the minimum acceptable level of ecological condition for riparian areas. The PFC for different types of riparian-wetland systems is fully defined in TR 1737-15, "A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas," and TR 1737-16, "A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lentic Areas." PFC can be summarized as the minimum acceptable level of ecological status where vegetation, landform, and/or woody debris create a level of inherent resiliency that allows the stream or wetland system to be protected from erosive forces, capture sediment, provide for infiltration, and create appropriate habitat. Riparian areas would be maintained, improved, or restored to enhance forage conditions, provide wildlife habitat, and improve stream and water quality. To achieve PFC, riparian areas would be managed to maintain dominance by species capable of stabilizing soils and stream banks. Riparian areas would be assessed on an as-needed basis to determine existing condition and whether specific management actions would be needed for improvement.

Site-specific activity and implementation plans would be prepared where needed to identify methods to achieve or maintain proper functioning condition as a minimum. Plans could include measures to reduce erosion and sediment yield, promote ground cover, and enhance water quality.

Desired Plant Community. Upland and riparian vegetation would be managed to achieve DPC objectives. This is a plant community that produces the kind, proportion, and amount of vegetation necessary for meeting or exceeding the land use plan requirements. DPC objectives for upland and riparian areas would be established for the planning area through individual site-specific activity and implementation planning and as updated ecological site inventory data become available.

The DPC objectives would emphasize wildlife habitat, livestock grazing, watershed, and biodiversity values while maintaining or enhancing habitat for special status species. Particular attention would be given to mountain shrub, basin big sagebrush/lemon scurfpea, aspen, and other unique or important vegetation types. Site-specific DPC objectives are determined by an interdisciplinary team, usually comprised of specialists in soil, vegetation, hydrology, and biology. The team determines desired vegetative conditions for an area by considering ecological potential, current and anticipated resource uses, applicable publications, and professional judgment.

Vegetation Treatments. Vegetative treatments would be designed on a case-by-case basis. Such activities may include seeding, reseeding, fence construction, weed control, and enhancement of fish and wildlife habitat. *Vegetation treatments would be used to abate, alter, or transform vegetation communities in an effort to achieve DPC objectives, protect water quality, dissipate erosion, and conform to requirements to protect or enhance special status plant and/or wildlife species and associated habitats (Appendix 6).* This may include activities such as manual or mechanical manipulation, chemical treatments, and prescribed burns (Appendix 8). Prescribed burns would be the preferred method of vegetation manipulation to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species. Prescribed burns would generally be conducted in areas having greater than 35 percent sagebrush composition, 20 percent desirable grass composition, and greater than 10 inches of precipitation. Low-intensity burns during periods of high soil moisture would be the preferred method/times in mountain shrub communities. Prescribed burns would be restricted in areas with coal or other fossil fuel outcrops. All vegetation treatments should be designed to be irregular in shape for edge effect, cover, and visual aesthetics. Areas proposed for treatment with prescribed burns would be rested 1 full year prior to treatment (unless vegetation cover prior to burning had adequate fine fuels to carry the fire) and 24 months after treatment, unless an onsite analysis determined that this time frame should be expanded or reduced. Treatments in aspen communities would be fenced on a case-by-case basis.

Herbicide loading sites would be prohibited within 500 feet of water sources, floodplains, riparian areas, and special status plant locations and would be used in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.

Fences. Where documented wildlife conflicts with fencing on public lands occur, fences would be modified, reconstructed or, if necessary, removed. Herding control of livestock would be encouraged as an alternative to fencing. Fence construction would be in accordance with BLM design standards and located so as not to overly impede wildlife movement. Consideration would also be given to special status species and wild horse movement.

Watershed Health Assessments. Watershed health assessments would be initiated to determine the condition of riparian areas and would be prioritized based on levels of development, rangeland standards, PFC, and other available data. Those watersheds with more sensitive baseline conditions would be the focus for increased monitoring efforts and mitigation.

Native Vegetation. Native vegetation would be managed to allow natural plant succession to continue, with emphasis on mountain shrub, basin big sagebrush/lemon scurfpea, aspen, and other unique or important vegetation types.

2.7.2.2 Fire Management

Management Objective—The planning area would be managed to use prescribed fire as a management tool to help meet multiple use resource management goals and to provide cost effective protection from wildfire to life, property, and resource values.

Fire Management Implementation Plan. Fire management in the planning area would be implemented through the Fire Management Implementation Plan for BLM-Administered Public Lands in the State of Wyoming. The plan emphasizes protecting natural resources and property while recognizing the essential role fire plays in restoring and maintaining the health of the public lands. The primary objectives of the plan are to use prescribed fire as a management tool to help meet multiple use resource management goals and to provide cost effective protection from wildfire to life, property, and resource values. The plan would be reviewed and updated as necessary to be consistent with federal wildland fire policy and the National Fire Plan.

Fire Suppression. Wildland and prescribed fires would be managed in all vegetation types to maintain or improve biological diversity and the overall health of the public lands. In particular, plant species and age class diversity would be a priority; thus all wildfires would be suppressed to some degree depending on their potential impact on vegetation communities. Suppression techniques would be identified to reduce wildfire on portions of the landscape where fire could cause undesirable changes in plant community composition and structure. Full fire suppression for basin big sagebrush/lemon scurfpea plant communities would be applied. A site-specific analysis would be prepared for sensitive resource areas, such as special status plant species sites, heritage sites, historic trails, and ACECs, to determine the type of fire suppression activity that would be acceptable.

2.7.2.3 Water Resources Management

Management Objective—The planning area would be managed to stabilize and conserve soils, to increase vegetative production, to maintain or improve surface and ground water quality, and to protect, maintain, or improve wetlands, floodplains, and riparian areas.

Water Quality. All surface disturbing activities would be required to adopt design strategies that serve to reduce erosion and maintain or improve water quality. The area within 500 feet of wetlands, riparian areas, and 100-year floodplains and the area within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities. Surface disturbing activities could be permitted within avoidance areas, provided that a mitigation plan is approved and a site-specific analysis determines that adverse impacts would not occur as a result of the activity.

Permanent Facilities. Permanent facilities such as storage tanks and structure pits would not be allowed in 100-year floodplains, wetlands, and riparian areas. *However, structures that would enhance the protection and management of 100-year floodplains, wetlands, and riparian areas would be considered.* Proposals for linear crossings in these areas would be considered on a case-by-case basis.

Erosion Control. Areas with highly erodible soils would be avoidance areas for all surface disturbing activities. Surface disturbing activities could be permitted within avoidance areas, provided that a mitigation plan is approved and a site-specific analysis determines that unacceptable impact levels would not occur as a result of the activity. When applicable, erosion control plans would be required as part of surface disturbing project proposals.

Colorado River Salinity Control. BLM would continue to participate with federal, state, and local government agencies to develop and implement salinity control plans for the Colorado River Basin and to maintain existing and future applicable water quality plans.

Wetlands and Floodplains. Wetlands and floodplains would be managed in accordance with Executive Orders 11988 and 11990 and section 404 of the Clean Water Act. In addition, projects to improve the ecological integrity of the dunal ponds would be considered and evaluated.

Riparian Management Exclosures. Riparian exclosures could be maintained and/or modified based on site-specific analysis. Where site-specific analysis determines they no longer serve their purpose, they could also be removed. New exclosures could be developed if they would benefit resources. Riparian exclosures are used to protect degraded riparian areas from further impacts associated with livestock grazing and to ensure reclamation of vegetation communities and ecological processes. Exclosures would remain closed to livestock grazing, and AUMs in these exclosures would not be available for livestock use.

Fluid Mineral Wells. Water wells constructed to provide water for drilling of fluid mineral wells (oil, gas, or coalbed gas wells) would be constructed in compliance with BLM regulations for resource protection. Hydrogeologic investigations would be required where there was a reasonable expectation that surface water features were in connection with geologic formations being dewatered. Such investigations would serve to determine the extent of the potential impact and provide information that could assist in mitigation of undesirable effects related to development. Attributes that could trigger a hydrogeologic investigation would include, but would not be limited to, preexisting designation of an area as a recharge zone; similar water chemistry between surface waters and proximity of a proposed project to ground water; shallow water tables; springs and/or seeps; wetlands; streams or water courses; and/or underlying lithology that suggests surface/ground water communication, such as dipping geologic beds, fractures in the underlying rocks, and shallow producing zones. Mitigation requirements would also be implemented as needed to protect surface waters. Appropriate measures would be applied to protect ground water quality and prevent commingling of aquifers (Appendix 6)

Aquifer Recharge Areas. Aquifer recharge areas would be managed to maintain or enhance recharge volume and ground water quality by limiting road density and surface occupancy to maintain a healthy recharge area. Studies would be conducted in relation to specific projects to better define aquifer recharge area boundaries.

2.7.2.4 Wild Horses Management

Management Objective—The planning area would be managed to protect, maintain, and control viable, healthy herds of wild horses in the Divide Basin Herd Management Area (HMA) at Appropriate Management Levels (AML) while retaining their free-roaming nature, to provide adequate habitat for free-roaming wild horses through management consistent with principles of multiple use and environmental protection, and to provide opportunity for the public to view wild horses.

Wild Horse Herd Management Area Boundaries and Appropriate Management Levels. Wild horse populations would be managed within the Great Divide Basin HMA at an AML of 415 to 600 horses. The Great Divide Basin HMA boundaries would remain unchanged.

Activity and Monitoring Plans. Land use decisions and site-specific activity planning would focus on ensuring that adequate forage was available to support the AML. Site-specific activity planning would be implemented to support herd management decisions throughout the entire Great Divide Basin HMA. Annual monitoring data would be collected to evaluate progress toward meeting management goals and objectives.

Water Developments. Water developments would be provided as needed to improve wild horse herd distribution and manage forage utilization. *Water developments within sensitive wildlife habitats would be considered only if wildlife habitat and resource conditions were improved or maintained.* Compatibility with special status plant species would be required.

Gathering Plan. A selective gathering plan would be developed and implemented to remove excess horses from inside and outside the HMA to maintain the existing AMLs. Gathering cycles would vary by gathering plan objectives, resource conditions, and needs. Fertility control would be initiated only if necessary.

Public Education. Public education and enjoyment of wild horse herds is an important component of the National Wild Horse and Burro Program. Portions of this program would be implemented in the Great Divide Basin HMA by providing interpretive signs and access sites for viewing horses.

2.7.2.5 Livestock Grazing Management

Management Objective—The planning area would be managed to improve forage production and ecological conditions for the benefit of livestock use while providing for other resource values.

Guidelines for Livestock Grazing Management. The Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management (Appendix 10) would apply to all livestock grazing activities on public lands. These standards and guidelines address management practices at the grazing allotment management plan (AMP) and watershed levels and are intended to maintain desirable conditions or improve undesirable rangeland conditions within reasonable time frames. If livestock grazing were determined to be a factor in not meeting the Wyoming Standards for Healthy Rangelands, appropriate management actions would be implemented, as determined through cooperation between BLM, livestock operators, and interested publics. Achieving the standards or making significant progress toward achievement of the standards would be the first priority for all grazing allotments.

Rangeland and Riparian Habitat. Implementation of grazing management systems (AMP) would assist in improving or maintaining the desired range condition. Approved AMPs, or other activity plans intended to serve as the functional equivalent to an AMP, for each of the designated grazing allotments would provide the necessary guidance for achieving grazing management objectives. Appropriate actions for improving degraded rangeland and riparian habitat could include, but would not be limited to, reduction of permitted AUMs, modified turnout dates, livestock water developments, range improvements, modified grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions.

Forage Utilization Levels. Forage utilization levels for upland and riparian species would be in accordance with individual AMPs or other activity plans intended to serve as the functional equivalent of an AMP. Determination of forage utilization levels would be based on PFC guidelines, BLM reference handbooks, and professional judgment.

Livestock Water Developments and Range Improvements. Livestock water developments and range improvements would be considered to maintain or improve resource conditions and/or enhance livestock distribution. Compatibility with special status plant species would be required. *Water developments and/or range improvements proposed in sensitive wildlife habitat would be considered only if wildlife habitat and resource conditions were maintained or improved.*

Salt or Mineral Supplements. Salt or mineral supplements would be prohibited within 500 feet of riparian habitat and National Historic and Scenic Trails, unless analysis showed that these resources would not be adversely affected. These supplements would also be prohibited on areas inhabited by special status plant species, regardless of analysis findings. *Placement of salt blocks at least 500 feet away from wells, troughs and other human-made water sources would be encouraged to better distribute livestock.*

2.7.2.6 Vegetation Management

Management Objective—The planning area would be managed to maintain or enhance vegetation community health, composition, and diversity to meet watershed, wild horse, wildlife, and livestock grazing resource management objectives and to provide for plant diversity (desired plant communities).

Special Status Plant Species. Special status plants are those species federally listed as threatened or endangered, proposed for listing, or candidates for listing under the ESA. They also include species designated by each BLM State Director as sensitive and any species designated by a state agency in a category implying potential endangerment or extinction. The State of Wyoming does not have an official list of designated sensitive, threatened, or endangered plant species. Surveys would be conducted of potential habitat for federally listed, proposed, or candidate threatened and endangered plant species prior to any surface disturbance. Should any such species be found, all disruptive activities would be halted until species-specific protective measures were developed and implemented. For listed species, protective measures would be developed and implemented with the U.S. Fish and Wildlife Service (USFWS).

Specific management actions related to known locations of special status species habitat include closing locations to surface disturbing activities or any disruptive activity that could adversely affect the plants or their habitat and closing locations of special status species to location of new mining claims, mineral material sales, OHV use, including vehicles used for geophysical exploration activities and surveying, and use of explosives and blasting. Known locations of special status plant species would be open to consideration for mineral leasing with no surface occupancy (NSO) requirements.

Special status species potential habitat areas would be areas of controlled surface use (CSU) for surface disturbing activities.

Rights-of-Way Limitations. Areas where Wyoming BLM sensitive plant species are known to exist and/or have potential habitat, would be right-of-way avoidance areas (Map 49). Exceptions could be granted by the Authorized Officer if analysis shows that there is no adverse impact to the plant populations.

Fire Suppression. A site-specific analysis would be prepared for all fire management actions around special status plant species sites to determine the appropriate fire management response. Fire equipment and fire suppression techniques, such vegetation clearing, would be limited to existing roads and trails in special status plant species habitat.

Threatened and Endangered Plant Species. Surveys would be conducted of potential habitat for federally listed, proposed, or candidate threatened and endangered plant species prior to any surface disturbance or depletion of water sources. Should a species be located, formal consultation with USFWS would occur. Management prescriptions to provide, maintain, or improve habitat would be developed on a case-by-case basis.

Invasive Species. An invasive species is one that is nonnative to a particular ecosystem, and its introduction is likely to cause harm to the economy, environment, or human health. Federal agencies are directed under Executive Order 13112 to expand and coordinate efforts to prevent the introduction and spread of invasive species. Preventing the introduction and proliferation of invasive species would be accomplished through close monitoring and containment of infestations and through implementation of best management practices for all surface disturbing activities (Appendix 6). Public education regarding invasive species and the means to address them would also be promoted.

Forest and Woodland Health. Management of conifer and aspen communities would be designed to promote forest and woodland health. Old decadent trees may be left standing or downed to provide cover or other habitat for wildlife (Animal Inn). Animal Inn is an education and information program focused on the value of dead, dying, and hollow trees for wildlife and fish.

2.7.2.7 Wildlife Habitat Management

Management Objective—The planning area would be managed to maintain, improve, or enhance the biological diversity of wildlife species while ensuring healthy ecosystems, to restore disturbed or altered habitat, with the objective of attaining desired native plant communities, while providing for wildlife needs and soil stability, and, to the extent possible, to provide suitable wildlife habitat and forage to support the WGFD strategic plan population objectives.

Habitat Management Plan. A habitat management plan (HMP) identifies management actions to be implemented to achieve specific objectives related to RMP decisions. An HMP focuses on priority species and their habitats; therefore, the plan is generally limited to a specific geographic area. Plans would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives (in coordination with the WGFD). These plans would guide BLM in managing and rehabilitating wildlife habitat in site-specific locations within the planning area. HMPs would be prepared as needed for highly disturbed areas to mitigate wildlife habitat losses. To the extent possible, suitable wildlife habitat and forage would be provided to support the WGFD Strategic Plan objectives. Changes in the WGFD planning objective levels would be considered based on habitat capability, availability, and site-specific analysis.

Water Developments. Wildlife water developments would be considered on a case-by-case basis to maintain or improve wildlife habitat and resource conditions.

Special Status Wildlife Species. Special status wildlife species are those species federally listed as threatened or endangered, proposed for listing, or candidates for listing under the ESA. They also include species designated by each BLM State Director as sensitive, and any species designated by a state agency in a category implying potential endangerment or extinction.

Federal agencies are required to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of species listed as threatened or endangered or adversely modify or destroy their critical habitat under the ESA. The ESA requires federal agencies (e.g., BLM) to consult with the USFWS to determine whether their actions may affect any listed or proposed species and to document their determinations in a Biological Assessment (Appendix 3). Land use decisions would be implemented with appropriate conservation measures or with reasonable and prudent alternatives to avoid jeopardizing any species or habitat or to avoid the need to list species or their habitat.

Surveys or searches would be conducted of potential habitat for federally listed, proposed, or candidate threatened and endangered wildlife species prior to any surface disturbance. Should a special status wildlife species be found, all disruptive activities would be halted until species-specific protective measures developed with the USFWS could be implemented. BLM would take proactive measures to improve habitat character on an as-needed basis per BLM 6840 policy and section 7 of the ESA. Specific management actions related to known locations of special status species habitat are outlined in Table 2-1.

Sensitive Habitat. Crucial winter range or sensitive habitats, birthing areas, the connectivity area (migration corridor), nesting sites, and sensitive fisheries habitats would be maintained or improved. This would be accomplished by maintaining habitat or reducing habitat loss or alteration, improving habitat where possible, and by applying appropriate mitigation requirements (e.g., distance and seasonal limitations, rehabilitation) to all appropriate activities. Exceptions could be provided on a case-by-case basis should exception criteria (Appendix 4) be met. Seasonal limitations for wildlife habitat would be applied as necessary to protect sensitive wildlife areas from development and/or disruptive activities during crucial times in a wildlife species' lifecycle, such as nesting, birthing, and wintering. Wildlife seasonal stipulations would not close an area to development but would protect wildlife species if weather or other habitat needs dictate that it is necessary (Appendix 5). BLM may grant exceptions to seasonal limitations if the wildlife biologist, in consultation with the WGFD, concluded that granting an exception would not jeopardize the population being protected. Criteria for exceptions are outlined in Appendix 4 of this document. Seasonal limitations for the Proposed JMH CAP are shown in Table 2-3.

Predator Damage Control. BLM would continue to coordinate with APHIS-WS and review their annual management plan for animal damage control activities on public lands. *Proposed animal damage control activities not compatible with BLM planning and management prescriptions or objectives for other resource activities and uses would be identified on a case-by-case basis. BLM would determine appropriate planning strategies, with input from APHIS-WS.*

The JMH CAP planning area would be designated as a "restricted control area" for predator control in coordination with APHIS-WS. Restricted control areas are public land areas where predator damage management may be planned, but control activities may be limited to certain methods or times of the year. Emphasis would be placed on nonlethal methods. Control techniques and methods would be discussed at an annual meeting.

Greater Sage-Grouse Leks, Nesting and Early Brood-Rearing Habitat. Site-specific evaluations would be conducted for breeding habitat (leks, nesting and early brood-rearing). Field searches conducted as part of these evaluations would determine if the site has the vegetation composition, height, and cover needs necessary to support greater sage-grouse breeding activities (Appendices 4, 5 and 6).

Surface occupancy (long-term or permanent aboveground facilities) would be controlled within ¼ mile of greater sage-grouse leks unless adverse impacts could be mitigated. Distances would be subject to change on a case-by-case basis dependent on applicable scientific research and site-specific analysis. Disruptive activities would also avoid occupied greater sage-grouse leks during appropriate evening and early morning hours, usually from 8:00 p.m. to 8:00 a.m. daily. The actual area to be avoided and appropriate time frame (typically March 1 to May 15) would be determined and applied on a case-by-case basis.

Seasonal limitations on surface disturbing and disruptive activities (usually from March 15 to July 15) would apply in nesting and early brood-rearing habitat (Map 50). These limitations would be determined and applied on a case-by-case basis. In addition, nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within the areas identified on Map 50, on an as-needed basis.

Greater Sage-Grouse Winter Range. Disruptive activities would be prohibited in greater sage-grouse winter range usually from November 15 to March 15 (Map 50). These areas are subject to change based on new data and scientific information.

All Greater Sage-Grouse Habitats (Leks, Nesting, Early Brood-rearing, and Winter Range). The management practices in greater sage-grouse habitats would be designed to limit direct loss of habitat and prevent habitat degradation. Surface disturbing and disruptive activities would avoid these habitats. Measures would be taken to improve habitat character on an as-needed basis in conformance with BLM 6840 policy and to the extent possible, with the Wyoming Greater Sage-Grouse Conservation Plan (WGSGCP).

Avoidance areas may vary depending on natural topographic barriers, terrain, type of activity, line-of-sight distance, vegetation structure and cover, habitat needs, and other such factors. Exceptions to avoidance areas and seasonal limitations could be provided on a case-by-case basis provided appropriate mitigation could be implemented (Appendix 6 provides examples) and the exception criteria (Appendix 4, Procedures for Processing Proposals for Land Use Authorizations in areas of Seasonal Restriction) have been met.

The actual area to be avoided and appropriate time frames would be determined on a case-by-case basis dependent on applicable scientific research and site-specific analysis and in coordination with commodity users and other appropriate entities.

Mitigation of adverse effects (e.g., noise and traffic) on all habitats would be determined and applied on a case-by-case basis.

Maintenance and Operational Activities in all Greater Sage-Grouse Habitats. In greater sage-grouse habitats, surface disturbing maintenance and operational activities would require mitigation measures or development plans. These mitigation measures or development plans would be based on local situations on a case-by-case basis.

Big Game Winter Range. Disruptive activities would be prohibited in big game (elk, deer, and antelope) crucial winter range between November 15 and April 30 (Map 50). Seasonal limitations may be excepted, provided criteria in the Procedures for Processing Applications in Areas of Seasonal Restriction (Appendix 4) can be met and appropriate mitigation can be implemented (as determined by BLM in coordination with commodity users).

Big Game Birthing Areas. Surface disturbing and disruptive activities and the amount of habitat disturbed would be limited in big game birthing areas from May 1 to June 30.

Black-Footed Ferret. The USFWS has established survey protocols for the black-footed ferret (listed as endangered under the ESA). Surveys for black-footed ferrets would be completed according to current USFWS protocol within 1 year prior to conducting any surface disturbing or disruptive activities in all or portions of potential ferret habitat areas (prairie dog colonies 200 acres or greater in size) because of the close association of the two species (Appendix 3). Should a ferret be found, all disruptive activities would be stopped until protective measures developed with the USFWS could be implemented. Surface disturbing activities could proceed provided the surveys result indicated no presence of black-footed ferrets.

BLM would cooperate with USFWS and WGFD on any black-footed ferret reintroduction within the JMH CAP planning area.

Measures would be taken, as appropriate, to reduce potential raptor perches in and around prairie dog towns and colonies, such as constructing anti-perch devices on power poles.

Mountain Plover. Mountain plover surveys would be required prior to authorizing any surface disturbing or disruptive activities in potential plover habitat. Surveys would be conducted within suitable mountain plover habitat by a qualified biologist using protocol determined by the Rock Springs BLM biologist. Active mountain plover nesting aggregation areas (Map 17) would be avoidance areas for surface disturbing and disruptive activities within ¼ mile of the area from April 10 to July 10.

Traffic speeds on BLM roads during the brood-rearing period (June and July) would be limited within ¼ mile of nesting aggregation areas. Exceptions or other mitigation measures could be applied on a case-by-case basis, as determined by BLM in coordination with commodity users.

Measures (e.g., avoidance, burying power lines, installation of antiperch devices, and exclusion for artificial nest structures) would be taken to limit hunting perches or artificial nest sites for avian predators within ¼ mile of nesting aggregation areas.

Game Fish and Special Status Fish Species. Seasonal limitations for surface disturbing activities to protect game and special status fish species during spawning would be applied.

Raptor Nesting Sites. Active and historic raptor nesting sites (Map 17) would be protected and managed (e.g., through distance restrictions) for continued nesting activities. Different species of raptors may require different types of protective measures. Permanent or high-profile structures would be prohibited within a specified distance of active raptor nests. Distance would be determined on a case-by-case basis and would depend on the raptor species involved, natural topographic barriers, line-of-sight distances, and other such factors. Temporary disturbances associated with placement of facilities, such as pipelines, and other actions such as seismic activities, could be allowed within ½ to 1 mile of active raptor nests.

Disruptive activities would be seasonally restricted within a ½ to 1-mile radius of occupied raptor nesting sites. Raptor nest surveys would be conducted within a 1-mile radius or linear distance of proposed surface uses or activities during raptor nesting season (see Table 2-3 for dates which vary by species). Seasonal limitations may be excepted, provided criteria in the Procedures for Processing Applications in Areas of Seasonal Restriction (Appendix 4) can be met, and appropriate mitigation can be implemented (as determined by BLM in coordination with commodity users).

Introduction and Reintroduction of Species. BLM would cooperate with the Wyoming Game and Fish Department (WGFD) in studies for the introduction and reintroduction of native and nonnative (game) wildlife and fish species.

BLM would cooperate with the USFWS in studies for, and reintroduction of, special status species.

2.7.3 Heritage Resources Management

Management Objective—The planning area would be managed to expand the opportunities for scientific study and educational and interpretive uses of cultural and paleontological resources, protect and preserve important cultural and paleontological resources and/or their historic record for future generations, resolve conflicts between cultural/paleontological resources and other resource uses, and to foster opportunities for Native Americans to use heritage resources.

The State Historic Preservation Office (SHPO) would be consulted under provisions of the National Historic Preservation Act (NHPA) on any potential effects on heritage resources. Sites that are not eligible for the National Register of Historic Places (NRHP) would be managed on a case-by-case basis according to their values. Sites that are listed or eligible for listing on the NRHP would be managed for their local, regional, and national significance in accordance with the NHPA and the Archaeological Resources Protection Act (ARPA). Sites would be managed to ensure against adverse effects, through proper mitigation if disturbance or destruction is not avoidable. Mitigation may include scientific information retrieval as well as other measures, such as interpretation and improved public appreciation of the heritage resource.

Heritage Resources Protection. Heritage resources in special management areas would remain protected through specific and general management actions (mitigation requirements and site-specific management prescriptions) associated with designated ACECs, WSAs, and National Historic Trails (Appendix 7). Heritage resources are found in the Greater Sand Dunes ACEC (including Boars Tusk and Crookston Ranch), White Mountain Petroglyphs ACEC, South Pass Historic Landscape ACEC (including the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails), and the Tri-Territory Marker (Map 2). Other areas may be identified and included in the future pursuant to procedures, including public participation, outlined in Appendix 7.

Protection of Scientific Values. Management of heritage resources would include inventories and mitigation as needed for specific projects. An appropriate level of analysis of all surface disturbing activities would be conducted to determine the potential effect of the activity on the resource and its eligibility for listing on the NRHP. Site stewardship and public education aspects of the Heritage Resource Program would continue to be implemented. Sites eligible for inclusion in the NRHP because of their scientific value would be protected. Preservation of the scientific information would be the preferred mitigation method should any such sites have to be impacted by other activities. These sites include Finley, Krmpotich, and Eden-Farson archaeological sites and the paleosol deposition area. Other sites will be included as they are located, recorded, and evaluated for NRHP eligibility.

The paleosol deposition area, including the Finley, Krmpotich, and Eden-Farson archaeological sites and geological deposits in the area, has been identified as an important heritage resource area. *The paleosol deposition area would be designated the West Sand Dunes Archaeological District Special Management Area to be managed for scientific study, education, and interpretation.* Site locations would be kept confidential, and surface disturbance would be limited in the vicinity. Heritage resource inventories in this area would be required to include analysis of subsurface deposits to ascertain whether they include important archaeological materials. *Subsurface inventory would be required by remote sensing techniques, hand-dug test excavations, or mechanical testing prior to issuing any surface disturbing authorizations in the West Sand Dunes Archaeological District. Subsurface testing would require an approved testing plan and BLM–SHPO consultation. Mitigation may include research-oriented data recovery excavation.* The testing strategy should be appropriate to meet the goal of finding buried paleosols and evaluating their potential association with archaeological materials.

The Finley site would be nominated to the NRHP under the Register's History of American Archaeology context and under the Earliest Americans context.

The Krmpotich site would be nominated to the NRHP under the Register's Earliest Americans context.

National Register Eligible Sites. All National Register-eligible historic sites would be protected through provisions of the NHPA and ARPA. Sites eligible for inclusion in the NRHP under Criterion D because of their scientific information content would be surrounded by a 100-foot avoidance area, pursuant to the Protocol Agreement between BLM and SHPO (Appendix 7). Other select NRHP eligible sites would be nominated to the NRHP. BLM may request development proponents to fund preparation of NRHP nominations on a case-by-case basis. Sites with uncommon values may require different case-specific management.

Native American Sites. Areas located in Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, Joe Hay Rim, and the Indian Gap Trail have been identified as respected places, which may include sacred sites or Traditional Cultural Properties of Native Americans. These areas would continue to be protected by provisions of the NHPA and AIRFA. Consultation with Tribal leaders in accordance with the NHPA and AIRFA concerning management of all identified Traditional Cultural Properties (TCPs), sacred sites and respected places would continue on a regular basis. *When activity is proposed in the vicinity of TCPs, sacred sites and/or eligible respected places, management would be developed through consultation with Tribal leaders, SHPO and the activity proponent based on the characteristics of the site and the proposed activity. Mitigation may include siting activity in such a way as to protect the foreground viewshed of the area of concern, if appropriate.* Viewshed management goals would correspond with existing VRM classifications. This may necessitate limiting, or mitigating the visibility of permanent intrusions generally within a 270-degree radius from the identified respected place to the prominent landscape features.

The Indian Gap Trail would be researched and mapped and a trail interpretive plan would be developed.

Surface disturbance and disruptive activities would be prohibited within a specified distance, but not less than 100 feet, of these and other Native American respected places. Actual distance would be determined on a case-by-case basis.

Expansion Era Roads and Associated Sites. Expansion Era roads would be managed similar to the historic trails covered in the Oregon/Mormon Pioneer National Historic Trails Management Plan (BLM 1986), with prescriptions from that plan applied, although the ¼-mile protective setback might not always be applicable. Management actions would include development of activity plans with the objective of preserving the historical integrity of significant NRHP contributing segments of the historic roads. Activity plans may include NRHP nomination of those Expansion Era roads that qualify.

Historic Livestock Management Sites. Numerous livestock tending campsites and other pastoral agricultural sites have been identified throughout the JMH CAP planning area. Some of these locations may be eligible for inclusion in the NRHP within the context of the development of pastoral agriculture in Wyoming and the Rocky Mountain region. These sites would continue to be protected under provisions of the NHPA. *NRHP eligible historic livestock management sites would be protected from surface-disturbing activities within a minimum area of 100 feet.*

Native and Euro-American Sites. Historic and archaeological sites within the context of early contact between Native Americans and Euro-American peoples have been identified, but they are understood only in general terms. The historical context of these sites would continue to be developed, and an interpretive program would be developed to improve public appreciation of these locations. Some or all of these sites may be nominated to the NRHP and/or included in the Backcountry Byways program.

Paleontological Sites. Documented significant fossil sites would be avoided to protect scientific and educational values. Management guidelines included in BLM Handbook 8270-1 would apply. If impacts are unavoidable, the site would be evaluated by a BLM-approved paleontologist (and may require a paleontological survey), who would coordinate with BLM in developing a mitigation plan. The mitigation plan may include activity monitoring, fossil documentation, recovery, and storage in a federally approved repository.

Unique Geologic Features. The Boars Tusk area would be closed to surface disturbing activities, mineral material sales, and use of explosives and blasting. The area within a ½ mile radius of Boars Tusk (including Boars Tusk) would be closed to blasting and explosive charges. The Boars Tusk area would be open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the site; however, facilities would be prohibited from being developed on the geologic feature. The Boars Tusk area would be a right-of-way avoidance area. The Boars Tusk and approximately 1,400 acres of BLM-administered public lands in the surrounding area would be closed to any surface mining activity, but open to consideration of subsurface mining methods. Activities or ancillary facilities related to subsurface mining would be prohibited.

The Pinnacles Geologic Feature (about 1,300 acres) would be an exclusion area for rights-of-way. Surface use would also be controlled. The use of explosives on and within ½ mile of the Pinnacles Geologic Feature would be prohibited. The VRM classification for the Pinnacles Geologic Feature would be Class II. Vehicular travel within ½ mile of the Pinnacles Geologic Feature, and including the features, would be limited to designated roads and trails. The Pinnacles proper would be closed to surface disturbance.

Mineral leasing and mineral locations actions would be as described in Section 2.7.6.

Tri-Territory Marker. The Tri-Territory Marker would be an exclusion area for rights-of-way, and would be closed to surface disturbing activities. The Tri-Territory Marker would be withdrawn from mineral location and closed to coal and sodium exploration. The Tri-Territory Marker would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area.

2.7.4 Travel, Access, and Realty Management

Management Objective—The public lands in the planning area would be managed to support the goals and objectives of other resource programs, respond to public demand for land use authorizations, and acquire administrative and public access where necessary.

Transportation Planning. A transportation plan for the JMH CAP planning area would be developed in coordination with local governments and users. The transportation plan could include mitigation measures (such as offsite placement of facilities, remote control monitoring, restricted or prohibited surface use including road construction, multiple wells from a single pad, central tank batteries/facilities, pipelines and power lines concentrated in specific areas, all based on site-specific analysis) in areas subject to seasonal limitations and CSU and NSO stipulations. Transportation planning would include coordination with local governments, stakeholders, and other publics.

Transportation planning would provide for access to achieve multiple use goals while providing maximum protection for crucial habitats and sensitive resources. Transportation planning would consider—

- Limiting points of access for all activities to minimize disruption.
- Closing and rehabilitating unused roads and trails and those causing resource damage. This would be subject to county review of existing rights-of-way needs. The transportation plan and affected maps would be corrected to reflect closed roads and trails.
- Avoiding construction of stream or riparian area crossings in sensitive areas, and closure of unnecessary crossings. Exceptions may be granted if crossings would reduce adverse effects, benefit area objectives, and reduce miles of road and/or frequency of use. Bridges (versus culverts) would be required for perennial stream crossings.
- Limiting development zones to be accessed by designated routes.

Travel Management Plan. In conjunction with the overall transportation planning for JMH, travel management plans (Map 29) would be developed for the two northern calving areas and the Steamboat Mountain, White Mountain, and Essex Mountain areas to control access in these areas.

Road Installations. Proposed road installations and improvements would follow the Green River RMP management objectives and applicable BLM guidelines until a JMH transportation plan is prepared and approved. Exceptions to the plan would address site-specific conditions to minimize impacts on natural and cultural resource values. Proposed roads and improvements for Steamboat Mountain and White Mountain would follow the guidelines specified in Appendix 12.

Geophysical Activities. The planning area would be open to geophysical exploration and related detonation activities, subject to appropriate mitigation and the same limitations applied to rights-of-way (Map 49). Exploration activities would be allowed in sensitive resource areas only if they could be performed with acceptable mitigation of impacts. Geophysical exploration (vehicles and detonation) activities would be prohibited in WSAs. *Geophysical exploration (vehicles and detonation) activities would be prohibited within ½ mile of the Pinnacles Geologic Feature* and would not be allowed in areas of sensitive heritage resources and geologic features, such as Boars Tusk, White Mountain Petroglyphs, special status plant species, and historic trails. Exceptions may be granted on a case-by-case basis, subject to appropriate site-specific analysis and mitigation requirements.

Rights-of-Way. The planning area, with the exception of defined exclusion and avoidance areas, would be open to considering grants of rights-of-way

The extent of right-of-way exclusion and avoidance areas, based on the location of specific sensitive resources, would be as shown on Map 49.

Linear Rights-of-Way. To the extent possible, utility and transportation rights-of-way would be located to coincide with existing roads, trails, and other right-of-way or easement concentration areas where they would not create safety hazards or conflict with other resource objectives.

Winter Access. Winter access would be subject to seasonal road closures. Where winter access on roads other than those identified for winter access in the transportation plan is necessary, routes would be determined on a case-by-case basis in accordance with transportation planning requirements. Plowing of roads would be considered on a case-by-case basis.

Off-Highway Vehicle Management. Management of OHV activities would be in accordance with Executive Order 11644, as amended by Executive Order 11989, and applicable regulations (43 CFR 8340) that address the use of OHVs on public lands. Designation and authorization of OHV use would be controlled to protect resource values, promote safety of users, and minimize conflict among various uses of public lands. OHV designations include Open, Limited to Designated Roads and Trails, Limited to Existing Roads and Trails, and Closed (see Glossary for definitions). Where OHV designations have not been made by BLM, use would be limited to existing roads and trails.

Public lands in the JMH CAP planning area would remain open, limited, or closed (Map 52). The OHV management prescriptions identified in the Green River RMP would be implemented. In addition to these designations, *the Pinnacles Geologic Feature would be closed to OHV use, and OHV use would be limited to designated roads and trails in the South Pass Historic* Landscape ACEC (portion not visible), *cushion plant community, and Steamboat Mountain Management Area.*

Specific roads and trails may be closed to OHV use for public health and safety reasons, restoration or remediation actions, or other valid reasons.

Specific roads and trails may be closed or seasonally closed to OHV use on an as-needed basis for public health and safety reasons, restoration or remediation actions, habitat protection, or for other valid reasons as determined by BLM (Map 52).

Exceptions to closed or limited OHV designations may be granted by the Authorized Officer in consideration of such factors as scientific purposes and emergency access needs.

Over-the-Snow Vehicles. Travel by over-the-snow vehicles would be limited to the OHV designations and BLM trails designated for snow vehicle access. Any travel off existing routes would be considered on a case-by-case basis.

Land Withdrawals and Exchanges. Public lands would be retained in federal ownership unless it was determined to be in the best public interest to dispose of some of them.

Land withdrawals and exchanges identified in the Green River RMP would be pursued. Exchanges would conform to the JMH planning objectives and actions. BLM acquisition of lands would be considered to facilitate various resource management objectives. The preferred method for acquisition would be through exchange. Land exchanges are considered discretionary and voluntary real estate transactions between the willing parties involved. Exchanges for state lands in WSAs and other special management areas would be considered to ensure easier and consistent management in these areas. Exchanges would be considered to acquire state or private lands that hold high cultural and historical value; important resource values, such as habitat for threatened and endangered species; and that would facilitate resource management objectives, such as preventing habitat fragmentation.

Ownership Adjustments. Aquatic, wetland, and riparian habitat would not be suitable for disposal unless opportunities existed for land exchanges of equal or greater value (including monetary and functional resource values).

Access. Access to public, state, and private land would be provided throughout the planning area and would be restricted only where necessary to protect public health and safety and to protect sensitive resources. Access would be guaranteed across public lands to landlocked private and state lands consistent with the guidelines and objectives set forth in the FLPMA. Access decisions would be consistent with existing regulatory requirements and would be made for the purposes of providing for the reasonable use and enjoyment of inholdings.

2.7.5 Recreation Resources Management

Management Objective—The planning area would be managed to ensure the continued availability of outdoor recreational opportunities sought by the public, while providing for other resource values, to meet legal requirements for the health and safety of visitors, and to reduce conflicts between recreation and other types of resource uses.

Management of recreation resources would comply with applicable regulations (43 CFR 8300 et al.) for functions and activities, such as OHV, visitor services, special recreation use permits, and commercial operations. All management actions and recreation uses would focus on the health and safety of the user and would provide for recreational opportunities while protecting sensitive resources.

Backcountry Byways. Recreation project plans would be developed for the Backcountry Byways program (Tri-Territory Loop and Red Desert) and would include interpretive and directional signs. The location of these signs would be coordinated with state and local governments and other interested parties for the Red Desert viewpoint from the dugway of Steamboat Mountain, the Chicken Springs overlook, Steamboat Mountain, Oregon Buttes, Honeycomb Buttes, and Indian Gap.

Greater Sand Dunes Recreation Area. A recreation site plan would be prepared for expansion of the parking area and camping facilities in the Greater Sand Dunes Recreation Area. This plan would address public health and safety, resolving user conflict, and protecting adjoining resources.

Recreation Project Plans. Recreation project plans and interpretive prospectuses would be developed as needed to address public demand and use of the Crookston Ranch historic site, Boars Tusk, wild horse viewing areas, Oregon Buttes, Honeycomb Buttes, Steamboat Mountain, National Historic Trails, White Mountain Petroglyphs, Indian Gap, and other Native American sites.

Camping. Overnight camping would be allowed throughout the planning area, including WSAs, in accordance with BLM guidelines. Dispersed camping would be allowed within 200 feet of a water source except where necessary to protect water quality and wildlife and livestock watering areas. Camping designations are a discretionary action approved by a BLM Authorized Officer. Areas would be closed to camping if resource damage occurred.

Special Recreation Use Permits. Special recreation use permits for managed activities that would occur in the JMH CAP planning area would be reviewed and subject to recommendations made by the RSFO.

This would allow the RSFO to track the amount, location, and timing of organized activity occurring within the planning area to monitor resource pressure. The permit evaluation process would consider the nature of the event, potential impacts to resources, conflicts with other events, and impacts to the quality of other visitors' experiences. Mitigation measures necessary to protect the resources would be included in any permit issued. A plan of operation would be required for all commercial recreational operators and outfitters. The plan would describe the type, extent, and location of the recreation use and the mechanisms by which the operator/outfitter would prevent impacts to environmental resources. Any requests in special recreation use permit applications to remove natural resources would be evaluated on a case-by-case basis after an environmental analysis process.

Recreational and Other Similar Mining Activity. Recreational mining and other similar activity would be allowed in those parts of the planning area that are not withdrawn from mineral location, or where such withdrawals would not be pursued. Withdrawn areas include the White Mountain Petroglyphs ACEC. Withdrawals would be pursued for the Steamboat Mountain diamond potential area, the western portion of the Greater Sand Dunes ACEC, South Pass Summit, Tri-Territory Marker, Crookston Ranch, Pinnacles Geologic Feature, Public Water Reserves, special status plant species locations, and the northern elk birthing areas.

Continental Peak/South Pass Connecting Side Trail. The Continental Peak/South Pass Connecting Side Trail would be managed as a side trail to the existing Continental Divide National Scenic Trail (CDNST). Management would be as described for the CDNST (BLM 1999). Existing primitive two-track roads, BLM roads that provide legal public access through certain private lands, segments of cross-country travel on BLM-administered public land, and an existing trail would be used as components of the CDNST. The existing primitive two-track roads and BLM road segments would continue to be open to motorized use. Cross-country travel routes would not be open to motorized use.

2.7.6 Minerals and Alternative Energy Resources Management

Management Objective—The planning area would be managed to maintain or enhance opportunities for mineral exploration and development while providing for other resource values.

All minerals and energy resource management actions would recognize valid existing rights and ensure compliance with existing legal and regulatory requirements. These would include leases issued under the Mineral Leasing Act of 1920 and Amendments, mining claims filed under the Mining Act of 1872, and existing permits for sales of mineral materials.

2.7.6.1 Leasable Fluid Minerals Management

Oil and Gas Leases. Areas that cannot be offered for lease include WSAs and other areas where fluid mineral leasing and development would not be in compliance with other laws or with land use planning decisions that prohibit fluid mineral leasing and development in certain areas (Map 54).

Upon completion of the JMH CAP, fluid mineral leasing, exploration, and development would be allowed in portions of the planning area with necessary mitigation. To meet the resource goals and objectives for the JMH CAP planning area (including providing adequate habitat and use of that habitat (crucial winter range, calving/fawning, migration corridors, etc.)), protection of sensitive resources, and protection of public health and safety, some areas would be closed to leasing (Map 54). Approximately 92,260 acres in portions of the Steamboat Mountain ACEC, Greater Sand Dunes ACEC, White Mountain Petroglyphs ACEC, Oregon Buttes ACEC, South Pass Historic Landscape ACEC, the White Mountain and Split Rock areas, and the core and connectivity areas would be closed to future oil and gas leasing (Area 3, Figure

A17-1, Appendix 17). As existing leases expire in Area 3 they would not be reoffered for lease (approximately 88,200 acres).

The remainder of the planning area would be open to fluid mineral leasing. Plan implementation would provide that Area 2 be open to leasing, considering such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Appropriate stipulations would be applied to protect sensitive resources. Approximately 35,500 acres (based on a ½-mile perimeter; see Appendix 17, Figures A17-1 and -2) along the perimeter of Area 3 would be available for leasing with an NSO stipulation. Although current technologies suggest that the ½-mile perimeter is adequate at this time, these NSO areas may be expanded to include additional adjacent acreage provided the JMH CAP objectives could be met.

To determine the effectiveness of lease stipulations/conditions of approval (COA) and to provide guidance for adopting new or modified stipulations/COAs, as needed to meet resource objectives, monitoring of sensitive resource indicators would occur. Indicators could include, but would not be limited to, wildlife population trends, reproduction rates, observed ranges, and habitat integrity. An interdisciplinary team would review the monitoring data to ensure that impacts were not exceeding acceptable levels as determined through this analysis (Appendix 17). Development levels may be adjusted and/or additional stipulations and COAs may be applied to new leases and proposed activities as appropriate and necessary to protect resource values. Proposed changes would be analyzed in subsequent NEPA documents (such as site-specific NEPA for well sites) in accordance with law and policy. Changes will be based on consideration of the following factors:

- *Data trends for indicators on the viability of potentially impacted wildlife and other sensitive resources, including impacts on indicators from other causes, such as disease, drought, or hunting*
- *Fragmentation of habitat and migration pathways due to development activities*
- *Net amount of surface disturbance, including approved development activities that will be implemented in nearby areas, and planned reclamation of existing surface disturbances*
- *Amount and location of actual land use activity.*

Under the implementation, monitoring, and evaluation strategy, suspended leases in the planning area that were put in place during preparation of the JMH CAP would be reinstated within 3 years of signing the Record of Decision, or earlier with an approved development plan (Appendix 17).

As leases expire within the portions of the planning area identified as open to future leasing (Areas 1 and 2), they would be considered for subsequent lease offerings on a case-by-case basis and include stipulations identified in Table 2-2 and stipulations identified through monitoring as described in the implementation, monitoring, and evaluation management strategy (Appendix 17 and the Lease Stipulations paragraph (below)). Proposed changes would be analyzed in subsequent NEPA documents (such as site-specific NEPA for well sites) in accordance with law and policy.

Buyout or exchange of existing leases from willing sellers may be considered on a case-by-case basis. Congressional legislation would be required to authorize lease buyouts.

Lease Stipulations. The lease stipulations would be based on the resources and land use decisions. The lease stipulations would notify the leaseholder that development activities may be limited, prohibited, or implemented with mitigation measures to protect specific resources. *Lease stipulations are identified in Table 2-2.* The stipulations would condition the leaseholder's development activities and provide BLM with the authority to require other mitigation or to deny some proposed exploration and development methods. The general types of resource protections in lease stipulations include:

- CSU through limitation on the amount and type of surface disturbance
- CSU through avoidance of other resources
- Timing restrictions on development activity
- NSO.

Monitoring data would be assessed and appropriate management actions would be identified by an interdisciplinary BLM team (with input from stakeholders and other publics). Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of nonnative species, and recreation activities. Lease stipulations may be adjusted or clarified (consistent with lease rights) based upon these data. Twelve basic sensitive resources and uses would be used to evaluate these lands and ensure that the appropriate mitigation is provided. These sensitive resources and uses may change or be added to in the future based upon the implementation, monitoring, and evaluation strategy (Section 2.7.1 and Appendix 17). If the evaluation concluded that planning area management objectives are not being met, adjustments would be made to remedy the situation.

Drilling Permits. A site-specific analysis would be performed prior to any development to identify and locate resource elements in the lease area that would require protection or mitigation measures. *Any surface disturbing and disruptive activities involved with development of existing leases would be subject to extensive review and mitigation that would allow appropriate levels of activity while meeting objectives and protecting sensitive resources in the area.*

BLM specialists would review sensitive resources with lease operators to develop and implement measures to allow for effective development operations where impacts could be avoided or mitigated. COAs for Applications for Permit to Drill (APDs) would allow necessary impacts for development to be technically feasible or economically viable (Appendix 14).

COAs for APDs would be based on site-specific analysis and would establish specific, necessary mitigation measures, not covered by stipulations, for resource and environmental protection (with emphasis on all interdisciplinary values), such as mitigation of effects to sensitive resources, seasonal limitations, noise reduction, and remote control operations. Some areas would need more intensive mitigation measures to protect sensitive resources and provide for public health and safety. These intensive mitigation measures or COAs would mostly apply to areas with overlapping sensitive resources (e.g., Areas 2 and 3 [Appendix 17]). Exceptions to lease stipulations and COAs would be allowed when site-specific analyses showed impacts to sensitive resources were within acceptable limits. See Appendix 4 for criteria for exceptions in areas with timing limitations (seasonal restrictions). Well spacing requirements for oil and gas resource protection would defer to the Wyoming Oil and Gas Conservation Commission guidance, with consideration for surface resource values. Timing of activities would be considered where consistent with lease rights and COAs for timing limitations would be based on monitoring of sensitive resource indicators, under the implementation, monitoring, and evaluation strategy, to ensure that unacceptable impacts do not occur. In addition, refer to Section 2.7.4 for additional mitigation measures that may apply as part of the transportation plan.

2.7.6.2 Leasable Solid Minerals Management

Exploration. Most of the planning area would be open to coal exploration activities, with avoidance and mitigation requirements needed to protect the resources (Map 55). Areas closed to coal exploration activities under the No Action Alternative (WSAs and Steamboat Mountain ACEC outside the area of coal recommendation) would remain closed. *In addition, Steamboat Mountain Management Area (outside the area of coal recommendation) would also be closed.*

Leasing. Lands within the Coal Occurrence and Development Potential Area have been identified as having a known or assumed potential for coal development (Map 56). These lands are reviewed against 20 criteria to determine whether they would be suitable for development (43 CFR 3461). These criteria consider existing resource values, such as heritage resources, scenic values, wildlife, threatened and endangered species, natural landmarks, and watersheds. The coal planning decisions made in the GRRMP apply (see Appendix 2). Lands within the planning area with coal development potential (Map 56) have been through the 20-point unsuitability criteria screening and multiple-use conflict analysis. Areas closed to coal leasing (unsuitable) include the western portion of Greater Sand Dunes ACEC, which includes the Sand Dunes WSA (Map 57). Lands within the planning area that have been through the 20-point unsuitability criteria screening process and would be acceptable for further coal leasing and development consideration (with appropriate conditions) are shown on Map 57.

Important geological, ecological, and historic resources would be open to consideration for coal leasing and development by subsurface mining methods. Such areas acceptable for coal leasing that would include NSO requirements include Boars Tusk and Crookston Ranch. Areas acceptable for coal development by subsurface mining and controls on surface facilities include Steamboat Mountain ACEC, the eastern part of Greater Sand Dunes ACEC, Tri-Territory Marker, and raptor nest sites with a ½- to 1-mile buffer. *The portions of the Steamboat Mountain Management area within the Coal Occurrence and Development Potential Area would also be acceptable for leasing for subsurface mining with CSU.* Leasing in big game habitat would be allowed provided that adequate habitat and overall activity levels can be maintained.

Areas outside this part of the planning area may also be considered for leasing for coal development but would have to be reviewed through the site-specific application of the coal screening process and would have to meet the suitability criteria for coal leasing. Restrictions on mining activity, such as NSO, or subsurface mining with controls on surface facilities, would be required on coal leases where needed for resource protection.

2.7.6.3 Locatable Minerals Management

Locatable Mineral Withdrawals. Proposed withdrawals from locatable minerals identified in the Green River RMP would be pursued (Map 53). Other withdrawals could be pursued as necessary. *Withdrawals from mineral location would be pursued in the northern elk calving areas (aspen stands plus adjacent, potential aspen habitat), the potential diamond development area of Steamboat Mountain ACEC, and the Pinnacles Geologic Feature.*

Withdrawals would be revoked for lands classified as prospectively valuable for oil shale. Upon revocation, the area would be open to the filing of mining claims, exploration, and development of locatable minerals. The White Mountain Petroglyphs ACEC, located in the oil shale classification lands, would be withdrawn from mineral location prior to the revocation.

Other areas that would be withdrawn from mineral location prior to the revocation of the coal classification include Greater Sand Dunes ACEC (western portion), special status plant sites, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit.

Valid existing rights to develop locatable mineral claims under the Mining Act of 1872 would be recognized (Map 53). In areas open to mineral location, mining claims could filed which would allow that claim be held and developed in accordance with applicable regulations (43 CFR 3809). Mining activities would also have to comply with other regulatory requirements, including limitations on air and water discharges, waste management, spill prevention, and endangered species.

Surface disturbing exploration activities of 5 acres or less on mining claims would require a notice to BLM. A plan of operations would be required for exploration-related surface disturbances greater than 5 acres, for all surface disturbances greater than casual use, and for a disturbance of any size in ACECs, WSAs, areas closed to OHV use, and any lands or waters known to contain Federally proposed or listed threatened or endangered species or their proposed or designated critical habitat. A plan of operations would specify how the operator intends to manage the mining operation and location of surface disturbing activities, including pits, adits or shafts, placement of waste rock and mine tailings, mills, conveyors, and surface impoundments.

2.7.6.4 Salable Minerals Management

Mineral Material Sales. Existing contracts for sales of mineral materials, such as sand and gravel, would be recognized. Mining of mineral materials would comply with applicable regulatory requirements (43 CFR 3600) and air and water quality protection regulations. A site-specific analysis would be performed before any exploration or extraction activity to identify and locate resource elements that would require protection or mitigation measures. Mineral material sales that pose impacts, that cannot be adequately mitigated, to identified cultural and historic resources and other sensitive resources would not be allowed. The Proposed JMH CAP would allow development as long as sensitive resources are protected from unacceptable impacts.

The planning area would be open to mineral material sales where required to meet planning objectives, such as construction and maintenance of roads in the approved transportation plan, or construction of recreational facilities, or other construction related to approved development activities (Map 58). Mining and reclamation plans would be prepared for each use of salable mineral materials to provide protection for sensitive resources and to restore disturbed areas.

Areas currently closed to mineral material sales would remain closed. These would include Crookston Ranch, Oregon Buttes ACEC, Native American burial sites, Boars Tusk, White Mountain Petroglyphs, Greater Sand Dunes ACEC, South Pass Historic Landscape ACEC (visible portion), South Pass Summit, raptor nesting sites, WSAs, and special status plant species. *Other areas closed to mineral materials sales would include the lava rock portion of Steamboat Mountain ACEC, the Pinnacles Geologic Feature, greater sage-grouse leks, and ½ mile around lek perimeter.*

The remainder of Steamboat Mountain ACEC and the Steamboat Mountain Management Area would be available for salable mineral development only when required to meet other planning objectives within the planning area. Greater sage-grouse nesting habitat would be open to mineral material sales only if related disturbance and reclamation could occur during one field season (Aug. 1 to Nov. 15) and the site could be returned (through reclamation efforts) to a condition usable by greater sage-grouse.

2.7.6.5 Alternative Energy Management

The planning area would be open to alternative energy development projects, such as wind or solar farms, consistent with the resource protection requirements and the transportation plan under this alternative. Permits or leases that would allow these developments to occur would include mitigation requirements to protect sensitive resources and would meet the location requirements for utility lines and roads required in the transportation plan. Site-specific assessments would be required to identify potential impacts from construction activity and operation noise on wildlife, heritage resources, and visual resources.

2.7.7 Visual Resources Management

Management Objective—The planning area would be managed to maintain or improve scenic values and visual quality; and to establish priorities for managing the visual resources in conjunction with other resource values.

The VRM classes provide the design standards for all surface disturbing projects (Map 59). Projects would be designed, sited, screened, or painted to reduce visual impacts regardless of the VRM classification.

The four VRM classes (I, II, III, IV) set standards for planning, designing, and evaluating projects by identifying various permissible levels of landscape alteration while protecting overall regional scenic quality. The scenic quality of an area is a measure of its visual appeal. The VRM class objectives range from very limited management activity (Class I) to activity allowing major landscape modifications (Class IV). Visual resource classes would be retained or modified to enhance other resource objectives, such as heritage resources, recreation uses, wild horse viewing, and special management areas. Projects would be designed to meet the objectives of established visual classifications, and appropriate mitigation would be applied.

VRM Class I Areas. The WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. Oregon Buttes ACEC and the western portion of Greater Sand Dunes ACEC, which fall within a WSA, would also be managed as VRM Class I areas.

VRM Class II Areas. Management actions on lands classified as VRM Class II would be designed to retain the existing character of the landscape. A visual transition area of 1 mile adjacent to each WSA would be managed as Class II to retain the existing character of the WSA landscape. A low level of change would be acceptable to the characteristic landscapes of the ACECs, thus the eastern portion of Greater Sand Dunes ACEC, South Pass Historic Landscape ACEC, and White Mountain Petroglyphs ACEC would be managed as VRM Class II areas (Map 59).

Steamboat Mountain ACEC, Steamboat Mountain Management Area, and unique geological features and landforms, including portions of White Mountain, Pinnacles Geological Feature, and the West Sand Dunes Archaeological District, would also be managed as VRM Class II areas (Map 59).

VRM Class III Areas. Split Rock, Eden Valley, portions of White Mountain, and the portion of the Red Desert Watershed within the planning area would be managed as VRM Class III (Map 59).

VRM Class IV Areas. All areas not managed as VRM Class I, II, or III for this alternative would be managed as VRM Class IV (Map 59).

2.7.8 Management of Special Management Areas and Other Management Areas

Management Objective—Special management areas would be managed to maintain or enhance the resource values and characteristics for which these areas were designated as special management areas.

Special management areas would continue to be managed to preserve and protect the integrity and character of the specific areas in accordance with ACEC policies and WSA interim management policies. Other resources and locations throughout the planning area that would be worthy of special protections would be designated as special management areas (Map 60).

2.7.8.1 Special Management Areas

2.7.8.1.1 Wilderness Study Areas

Geophysical Activities. Geophysical exploration and related detonation activities would be prohibited in these areas.

OHV Use. These areas would be closed to OHV use.

Leasable Fluid Minerals. These areas would be non-discretionary closure areas for fluid minerals leasing.

Leasable Solid Minerals. These areas would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. These areas would be closed to mineral material sales.

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

VRM. These areas would be managed as VRM Class I area to preserve the natural setting and existing character of the landscape.

2.7.8.1.2 Oregon Buttes ACEC

Geophysical Activities. Geophysical activities and related detonation activities would be prohibited within the ACEC.

Rights-of-Way. The ACEC would be managed as a right-of-way exclusion area.

OHV Use. The ACEC would be closed to OHV use.

Recreation. Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Oregon Buttes.

A recreation project plan and interpretive prospectus would be prepared and implemented for Oregon Buttes.

Leasable Fluid Minerals. The ACEC would be closed to consideration of fluid minerals leasing.

The area would be managed as an NSO area for other surface disturbing and disruptive activities.

Leasable Solid Minerals. The ACEC would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. The ACEC would be closed to mineral material sales.

Locatable Minerals. A plan of operations would be required for all activities greater than casual use.

VRM. The ACEC would be managed as a VRM Class I area.

2.7.8.1.3 South Pass Historic Landscape ACEC

Rights-of-Way. The South Pass Historic Landscape ACEC (visible portion) would be managed as a right-of-way exclusion area *for any right-of-way action that would adversely affect the viewshed (such as major transmission facilities or high profile facilities)*. The non-visible portion would be a right-of-way avoidance area.

OHV Use. OHV use within the entire ACEC would be limited to designated roads and trails.

Leasable Fluid Minerals. *A portion of the South Pass Historic Landscape would be closed to fluid mineral leasing (Map 54).* Portions of the South Pass Historic Landscape ACEC (visible portion) would be open to consideration of fluid minerals leasing with NSO requirements. *Portions of the South Pass Historic Landscape ACEC would be open to consideration of fluid minerals leasing consideration with stipulations to protect other resources. Stipulations could include but would not be limited to NSO requirements, controlled surfaced use, and timing of development activity. As leases expire in the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis with lease stipulations to protect sensitive resources. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.* The existing stipulations established in the Green River RMP would still apply in the management of the visible and non-visible portions of the historic landscape.

Leasable Solid Minerals. South Pass Historic Landscape ACEC (visible portion) would be closed to leasable solid minerals exploration and leasing.

Salable Minerals. South Pass Historic Landscape ACEC (visible portion) would be closed to mineral material sales.

Locatable Minerals. Withdrawal from mineral location would be pursued on South Pass Summit. Withdrawal from mineral location would also be pursued for the northern elk calving areas in part of the South Pass Historic Landscape ACEC.

VRM. The entire ACEC would be managed as a VRM Class II area.

The South Pass Historic Landscape ACEC viewshed would be maintained from approximately 3 miles of the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails. Intrusions within the viewshed area could be allowed provided the results of a visual analysis indicate they are not visible from the trail routes or that they can be mitigated.

2.7.8.1.4 White Mountain Petroglyphs ACEC

Rights-of-Way. The ACEC would be managed as a right-of-way exclusion area.

OHV Use. The ACEC would be closed to OHV use outside of identified access and designated parking areas.

Recreation. A recreation project plan and interpretive prospectus would be prepared and implemented.

Leasable Fluid Minerals. The ACEC would be closed to fluid minerals leasing consideration.

The area would be managed as an NSO area for other surface disturbing and disruptive activities.

Leasable Solid Minerals. White Mountain Petroglyphs Vista would be closed to coal and sodium exploration.

Salable Minerals. The ACEC would be closed to mineral material sales.

Locatable Minerals. Withdrawal from mineral location would be pursued.

VRM. The ACEC would be managed as VRM Class II area.

2.7.8.1.5 Steamboat Mountain ACEC

Steamboat Mountain ACEC would be expanded to include the highest concentration and overlap of unique habitat features, natural systems, and cultural values. These include a portion of the sand dunes stabilized by the basin big sagebrush/lemon scurfpea plant community, and the Native American respected places of Indian Gap and portions of the Indian Gap Trail (Map 60).

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area.

Communication Sites. Communication sites would be prohibited in Steamboat Mountain ACEC.

OHV Use. OHV use would be limited to designated roads and trails.

Recreation. Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Steamboat Mountain.

A recreation project plan and interpretive prospectus would be prepared and implemented for Steamboat Mountain.

Leasable Fluid Minerals. Most of the ACEC would be closed to fluid minerals leasing consideration (Map 54). The remainder of the ACEC would be open to consideration of fluid minerals leasing consideration with stipulations to protect other resources. Stipulations could include but would not be limited to NSO and CSU requirements and timing of development activity. As leases expire in the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.

Leasable Solid Minerals. The portions of Steamboat Mountain ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities (Map 57).

Those portions outside the coal development potential area would be closed to leasable solid minerals exploration and leasing (Map 55 and Map 57).

Salable Minerals. The lava portion of the ACEC would be closed to mineral material sales. The remainder of the ACEC would be open only when required to meet other planning objectives within the JMH CAP planning area.

Locatable Minerals. Withdrawal from mineral location would be pursued in the potential diamond development area of Steamboat Mountain ACEC.

VRM. *The entire ACEC would be managed as a VRM Class II area.*

2.7.8.1.6 Greater Sand Dunes ACEC

The Greater Sand Dunes ACEC designation and boundaries would remain unchanged (Map 14).

Rights-of-Way. The ACEC would be managed as a right-of-way avoidance area (within 1 mile or the visual horizon, whichever is closer).

OHV Use. The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to existing roads and trails.

Recreation. A recreation site plan would be prepared for expansion of the parking area and camping facilities at the Greater Sand Dunes Recreation Area. The plan would address public health and safety, resolving user conflicts, and protecting adjoining resources.

Leasable Fluid Minerals. A portion of the ACEC outside the WSA would be open to consideration of fluid minerals leasing with stipulations to protect other resources. Stipulations could include but would not be limited to NSO and CSU requirements and timing of development activity. Other portions of the ACEC would be closed to fluid mineral leasing (Map 54).

As leases expire in the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings.

Leasable Solid Minerals. The western portion of the ACEC would be closed to leasable solid minerals exploration and leasing. The eastern portion of the ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities.

Salable Minerals. The ACEC would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued in the western portion of the ACEC.

VRM. The ACEC would be managed as a VRM Class II area.

2.7.8.1.7 Special Status Plants ACEC

The Special Status Plant Species ACEC (identified in the Green River RMP) could be expanded into the Jack Morrow Hills CAP area on a case-by-case basis.

Disruptive Activities. Potential habitat of special status plant species' communities on federal lands or on split estate lands would require searches for the plant species prior to approving any project or activity. Should species be found, all disruptive activities would be halted until species-specific, protective measures are developed and implemented. For listed species, protective measures would be developed and implemented in coordination with the USFWS.

Rights-of-Way. Areas where special status plants occur would be managed as rights-of-way avoidance areas.

OHV Use. Areas where special status plants occur would be closed to OHV use.

Leasable Fluid Minerals. Known locations of special status plant species would be open to consideration for mineral leasing with NSO requirements *unless they occur in the area identified as closed to fluid mineral leasing (Map 54).*

Leasable Solid Minerals. Areas where special status plants occur would be closed to coal and sodium exploration as identified in the Green River RMP.

Salable Minerals. Areas where special status plants occur would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued where special status plants occur.

Rangeland Management. Salt or mineral supplements would not be allowed in areas where special status plant species occur.

Vegetation treatments would be designed to conform to requirements to protect or enhance special status plant species.

Herbicide loading sites would be prohibited within 500 feet of special status plant locations and would be utilized in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.

Fire Management. Fire suppression vehicular activities would be limited to existing roads and trails in special status plant species habitat.

A site-specific analysis would be prepared for all fire management activities around special status plant species sites to determine the appropriate fire management response.

2.7.8.1.8 West Sand Dunes Archaeological District

The paleosol deposition area would be designated a separate special management area called the West Sand Dunes Archaeological District to be managed for scientific study, education, and interpretation.

Rights-of-Way. The area would be managed as a right-of-way avoidance area.

Leasable Fluid Minerals. Most of the area would be open to consideration for fluid minerals leasing with requirements to protect sensitive resources. *Approximately 6,660 acres would be closed to fluid mineral leasing (Map 54). A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.*

VRM. *The area would be managed as a VRM Class II area.*

2.7.8.2 Other Management Areas

2.7.8.2.1 Pinnacles Geologic Feature

The Pinnacles Geologic Feature would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.

Rights-of-Way. The area would be managed as a right-of-way exclusion area.

Geophysical Activities. Geophysical exploration vehicles and detonation activities would be prohibited within ½ mile of the Pinnacles Geologic Feature.

OHV Use. The area would be closed to OHV use.

Leasable Fluid Minerals. The area would be closed to fluid minerals leasing consideration (Map 54).

Salable Minerals. The area would be closed to mineral material sales.

Locatable Minerals. Withdrawals from mineral location would be pursued.

VRM. *The area would be managed as a VRM Class II area.*

2.7.8.2.2 Pinnacles Geographic Area

The Pinnacles Geographic Area would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.

Leasable Fluid Minerals. The area would be closed to fluid minerals leasing consideration (Map 54). A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.

2.7.8.2.3 Steamboat Mountain Management Area

The Steamboat Mountain Management Area is a geographic area which would include the Steamboat Mountain ACEC, the Steamboat Mountain ACEC proposed expansion, and additional area containing other important Native American cultural values, important watershed values, unique wildlife habitat features, and crucial and overlapping big game habitat.

Rights-of-Way. The Steamboat Mountain Management Area would be managed as a right-of-way avoidance area.

OHV Use. OHV use would be limited to designated roads and trails.

Leasable Fluid Minerals. Approximately 77,000 acres would be closed to fluid mineral leasing (Map 54). The remainder of the area would be open to consideration of fluid mineral leasing with mitigation to protect sensitive resources.

As leases expire in portions of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis with lease stipulations to protect sensitive resource. As leases expire in other portions (Area 2 in Appendix 17) of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.

Leasable Solid Minerals. The Steamboat Mountain Management Area (outside area with coal recommendation) would be closed to leasable solid minerals exploration.

The entire Steamboat Mountain Management Area would be open to solid minerals leasing for subsurface mining with controls on surface activities and facilities.

Salable Minerals. The Steamboat Mountain Management Area would be closed to mineral material sales.

VRM. The Steamboat Mountain Management Area would be managed as a VRM Class II area.

2.7.8.2.4 Red Desert Watershed Management Area

Leasable Fluid Minerals. Approximately 42,250 acres would be closed to fluid mineral leasing (Map 54). The remainder of the area would be open to consideration of fluid mineral leasing with mitigation to protect sensitive resources. *As leases expire in portions of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis with lease stipulations to protect sensitive resource. As leases expire in other portions (Area 2 in Appendix 17) of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.*

OHV Use. OHV use would be limited to designated roads and trails.

VRM. The area would be managed as a VRM Class III area.

2.7.9 Air Resources Management

Management Objective—The planning area would be managed to maintain and, where possible, enhance present air quality levels and, within the scope of BLM's authority, minimize emissions that may add to acid rain, cause violations of air quality standards, or reduce visibility.

FLPMA states that, "The public lands [should] be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archaeological values." NEPA indicates that any proposed federal action should comply with other existing environmental laws, regulations, and standards (Section 104 [42 USC 4334]). This would include the Clean Air Act. In particular, the Clean Air Act Amendments of 1990 indicate that federal actions should comply with state and local as well as federal laws, regulations, and standards. Management actions for air resources management in the planning area would be implemented consistent with the land use decisions of the Green River RMP (Appendix 2).

Table 2-1. Summary Comparison of Alternatives

MANAGEMENT ACTIONS COMMON TO ALL RESOURCE OR LAND USE PROGRAMS				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
Monitoring Plan: An interdisciplinary monitoring plan would be developed to evaluate the overall effectiveness of implementing the management decisions for the planning area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	*An implementation, monitoring, and evaluation process, including an interdisciplinary monitoring plan, would be used to evaluate the overall effectiveness of implementing the management decisions for the planning area and used as a basis for making management adjustments.*
No similar action	No similar action	No similar action	No similar action	The primary aspects of the process are an implementation strategy for the process, a monitoring plan, and a list of 12 sensitive resources and uses to help determine what, where, under what conditions, and when areas should be open to surface disturbing or disruptive activities. See Appendix 17 for a detailed description of the management strategy to be employed.
No similar action	No similar action	No similar action	No similar action	Other detailed aspects of the implementation, monitoring, and evaluation process include the following: • Upon completion of the JMH CAP, portions of crucial habitats and other areas of sensitive or important resources would be open to further consideration for various multiple use activities, so long as crucial habitats and other sensitive or important resources would be protected from irreversible adverse effects. This would be accomplished through an implementation strategy that

MANAGEMENT ACTIONS COMMON TO ALL RESOURCE OR LAND USE PROGRAMS				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
				would include case-by-case review of all proposals, including use of a 12-point review criteria, application of mitigation measures to protect sensitive resources, and where applicable, controlled location and timing of the various activities and related reclamation in these areas. • Portions of the JMH CAP planning area would be closed to long-term surface disturbing and disruptive activities, rights-of-way (ROW), fencing, power lines, pipelines, long-term and permanent structures or facilities, mineral leasing, mineral exploration and development activities, rangeland improvements, land treatments, and long-term and permanent land and resource use commitments or allocations, if they would result in irreversible adverse effects. This would be done to satisfy needs for adequate wildlife habitat and use of that habitat (crucial winter range, calving/fawning, migration corridors, etc.), watershed protection, protection of other sensitive resources, and for public health and safety. These portions of the JMH CAP planning area are identified as no surface occupancy (NSO) areas in Table 4-8 and Map 50. • Additionally, in portions of Steamboat Mountain ACEC, Greater Sand Dunes ACEC, the

MANAGEMENT ACTIONS COMMON TO ALL RESOURCE OR LAND USE PROGRAMS				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
				White Mountain and Split Rock areas, and the core and connectivity areas, surface disturbing and disruptive activities would be subject to extensive review and mitigation that would allow appropriate levels of activity while meeting objectives and safeguarding sensitive resources in the area. Monitoring and evaluation would determine the effectiveness of the management prescriptions and mitigation measures. Adjustments could be made to ensure further activity would not cause fragmentation and abandonment of habitat, and would still meet stated management objectives, safeguard sensitive resources, and not result in irreversible adverse effects. This determination would be based on the effects on elk and their movement patterns, elk use of habitat, effects on other wildlife species and habitats, public health and safety, watershed condition, and effects on other sensitive resources. • Portions of the planning area would be closed to oil and gas leasing and development activities (Map 54). Other surface disturbing and disruptive activities in these portions of the planning area would be reviewed on a case-by-case basis. Surface disturbing and disruptive activities, such as ROWs,

MANAGEMENT ACTIONS COMMON TO ALL RESOURCE OR LAND USE PROGRAMS				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
				fencing, power lines, pipelines, long-term and permanent structures or facilities, rangeland improvements, land treatments, and long-term and permanent land and resource use commitments or allocations, may be allowed if they would not result in irreversible adverse effects. Existing oil and gas leases in this portion of the planning area would be recognized, and exploration and development activities on these existing leases would be allowed as appropriate based on site-specific analysis. Intensive mitigation, such as transportation planning; remote control of fluid mineral production facilities to limit travel; multiple-well pads to limit surface disturbances; limiting the number of pads per section in sensitive areas; use of directional drilling to minimize disturbance of sensitive areas; clustering or central location of ancillary facilities; shrub reclamation (containerized stock, transplanting, etc.) to restore, rehabilitate, or replace habitat; application of geotechnical material for construction; and potential unitization prior to exploration and development, may be required. Other resource projects or proposals could expect a similar in-depth consideration and may require similar mitigation measures (Table 2-2 and Appendix 17).

MANAGEMENT ACTIONS COMMON TO ALL RESOURCE OR LAND USE PROGRAMS				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
				• Monitoring and evaluation would incorporate information from the elk study conducted in the JMH CAP planning area (see Section 3.1.6.1.3), application of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management, proper functioning condition (PFC) determinations for riparian areas, and observations of impacts of activities and uses inside and outside the planning area. Appropriate mitigation would be applied to meet planning area management objectives. If it is determined that planning area management objectives are not being met, management would be adapted to address this situation.
Site-specific monitoring plans would be developed for project proposals.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Site-specific monitoring plans would be developed for project proposals.
No similar action	No similar action	No similar action	Resource indicators, developed as part of an interdisciplinary monitoring plan, would be used for determining effects of all activities on sensitive resources, with emphasis on wildlife and wildlife habitat.	Resource indicators, developed as part of the planning area management strategy of the implementation, monitoring, and evaluation process, would be used for determining effects of all activities on all resource values.

MANAGEMENT ACTIONS COMMON TO ALL RESOURCE OR LAND USE PROGRAMS				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
No similar action	No similar action	No similar action	Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of non-native species, and recreation activities.	Same as Alternative 3: Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of non-native species, and recreation activities, as part of the implementation, monitoring, and evaluation process.
No similar action	No similar action	No similar action	Monitoring data would be assessed, and response actions would be determined by an interdisciplinary BLM team (with input from stakeholders and other public entities).	Same as Alternative 3: Monitoring data would be assessed and, response actions would be determined by an interdisciplinary BLM team, with input from stakeholders and other public entities, as part of the implementation, monitoring, and evaluation process.
No similar action	No similar action	No similar action	Timing and sequencing for approving all actions and use authorizations would be imposed if indicators showed unacceptable effects on sensitive resources.	Timing and sequencing for approving all actions and use authorizations would be applied where feasible, but could be excepted if indicators showed effects on resources were within acceptable limits.

LAND AND WATER RESOURCES MANAGEMENT

Management Objective: To maintain or enhance land and water resources using ecological principles and science-based performance criteria

Management Actions for Land and Water Resources				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
Healthy Rangelands: The Wyoming Standards for Healthy Rangelands would direct on-the-ground management of public lands and would serve to focus the ongoing development and implementation of activity plans toward the maintenance or the attainment of healthy rangelands.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Wyoming Standards for Healthy Rangelands would direct on-the-ground management of public lands and would serve to focus the ongoing development and implementation of activity plans toward the maintenance or the attainment of healthy rangelands.
Proper Functioning Condition: All riparian areas would be assessed to determine existing condition.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: All riparian areas would be assessed to determine existing condition.
Riparian habitat in PFC is the minimum acceptable level of ecological condition.				Riparian habitat in PFC is the minimum acceptable level of ecological condition.
Riparian areas would be maintained, improved, or restored to enhance forage conditions, provide wildlife habitat, and improve stream and water quality.				Riparian areas would be maintained, improved, or restored to enhance forage conditions, provide wildlife habitat, and improve stream and water quality.
Site-specific activity and implementation plans to reduce erosion and sediment yield, promote ground cover, and enhance water quality would be prepared for areas where needed.				Site-specific activity and implementation plans to reduce erosion and sediment yield, promote ground cover, and enhance water quality would be prepared for areas where needed.

Management Actions for Land and Water Resources

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Desired Plant Community: Desired plant community objectives for upland and riparian areas would be established for the planning area through individual site-specific activity and implementation planning, and as updated ecological site inventory data became available.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Desired plant community objectives for upland and riparian areas would be established for the planning area through individual site-specific activity and implementation planning, and as updated ecological site inventory data became available.
Desired plant community objectives would focus on native plant communities.	Desired plant community objectives would emphasize commodity uses while complying with existing regulations pertaining to sensitive resources.	Desired plant community objectives would emphasize wildlife habitat, watershed, and biodiversity values. Particular emphasis would be placed on maintaining or enhancing habitat for special status species.	Desired plant community objectives would emphasize wildlife habitat, livestock grazing, watershed, and biodiversity values while maintaining or enhancing habitat for special status species.	Same as Alternative 3: Desired plant community objectives would emphasize wildlife habitat, livestock grazing, watershed, and biodiversity values while maintaining or enhancing habitat for special status species.
Vegetation Treatments: Vegetation treatments and methods would be considered on a case-by-case basis.	Same as No Action Alternative	Vegetation treatments and methods would be considered on a case-by-case basis, but limited to noxious weed control.	Same as No Action Alternative	Same as No Action Alternative: Vegetation treatments and methods would be considered on a case-by-case basis.
Vegetation treatments would be designed to protect water quality, dissipate erosion, and conform to requirements to protect special status plant species.	No similar Action	Same as No Action Alternative	Same as No Action Alternative	*Vegetation treatments would be used to abate, alter, or transform vegetation communities in an effort to achieve desired plant community objectives, protect water quality, dissipate erosion, and conform to requirements to protect or enhance special status plant and/or wildlife species and associated habitats (Appendix 6).*

Management Actions for Land and Water Resources

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Prescribed burns would be the preferred method of vegetation treatments to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species.	All methods of vegetation treatments would be considered on a case-by-case basis without preference.	Prescribed burns would not be considered.	Same as No Action Alternative	Same as No Action Alternative: Prescribed burns would be the preferred method of vegetation treatments to convert stands of brush to grasslands and to promote regeneration of aspen stands and/or shrub species.
No similar action	No similar action	No similar action	Treatments in aspen communities would be fenced on a case-by-case basis.	Same as Alternative 3: Treatments in aspen communities would be fenced on a case-by-case basis.
Low intensity burns during periods of high soil moisture would be the preferred method and timing in mountain shrub communities.	No similar action	No similar action	Same as No Action Alternative	Same as No Action Alternative: Low intensity burns during periods of high soil moisture would be the preferred method and timing in mountain shrub communities.
Prescribed burns would be restricted or prohibited in areas with coal or other fossil fuel surface outcrops.	No similar action	No similar action	Same as No Action Alternative	Same as No Action Alternative: Prescribed burns would be restricted or prohibited in areas with coal or other fossil fuel surface outcrops.
Prescribed burns would generally be conducted in areas having greater than 35 percent sagebrush composition, 20 percent desirable grass composition, and greater than 10 inches of precipitation.	No similar action	No similar action	Same as No Action Alternative	Same as No Action Alternative: Prescribed burns would generally be conducted in areas having greater than 35 percent sagebrush composition, 20 percent desirable grass composition, and greater than 10 inches of precipitation.
All vegetation treatments should be designed to be irregular in shape for edge effect, cover, and visual aesthetics.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: All vegetation treatments should be designed to be irregular in shape for edge effect, cover, and visual aesthetics.

Management Actions for Land and Water Resources				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
Areas treated with prescribed burns would be rested a minimum of two full growing seasons after treatment and fenced from livestock and big game animals if necessary.	No similar action	Same as No Action Alternative	Areas proposed for treatment with prescribed burns would be rested 1 full year prior to treatment (unless vegetation cover prior to treatment had adequate fine fuels to carry the fire) and would be rested 24 months after treatment.	Areas proposed for treatment with prescribed burns would be rested 1 full year prior to treatment (unless vegetation cover prior to treatment had adequate fine fuels to carry the fire) and would be rested 24 months after treatment, unless an onsite analysis determined this time frame should be expanded or reduced.
Herbicide loading sites would be prohibited within 500 feet of water sources, floodplains, riparian areas, and special status plant locations, and would be used in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Herbicide loading sites would be prohibited within 500 feet of water sources, floodplains, riparian areas, and special status plant locations, and would be used in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.
Fences: Where documented wildlife conflicts with fencing on public lands occurred, fences would be modified, reconstructed, or if necessary, removed.	Fences on public lands would be modified or reconstructed where documented wildlife conflicts with fencing occurred.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Where documented wildlife conflicts with fencing on public lands occurred, fences would be modified, reconstructed, or if necessary, removed.
Herding control of livestock would be encouraged as an alternative to fencing.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Herding control of livestock would be considered as an alternative to fencing.
Fence construction would be in accordance with BLM design standards and located so as not to overly impede wildlife or wild horse movement.	Fence construction would be in accordance with BLM design standards with no special consideration for location.	Fence construction would be in accordance with BLM design standards and located so as not to overly impede wildlife.	Same as No Action Alternative	Fence construction would be in accordance with BLM design standards and located so as not to overly impede wildlife movement. Consideration would also be given to wild horse movement and to special status species.

Management Actions for Land and Water Resources				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
No similar action	No similar action	Fencing would be used to limit wild horses to the modified boundary of the Divide Basin Herd Management Area (which excludes the JMH CAP planning area).	No similar action	No similar action
Watershed Health Assessments: Assessments of watershed health would be initiated based on levels of development, rangeland standards, PFC, and other available data. Those watersheds with more sensitive baseline conditions would be the focus for increased monitoring efforts and mitigation (Appendix 5).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Assessments of watershed health would be initiated based on levels of development, rangeland standards, PFC, and other available data. Those watersheds with more sensitive baseline conditions would be the focus for increased monitoring efforts and mitigation (Appendix 5).
Native Vegetation: Native vegetation would be managed to allow natural plant succession to continue, with emphasis on mountain shrub, basin big sagebrush/lemon scurfpea, aspen, and other unique or important vegetation types.	No similar action.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Native vegetation would be managed to allow natural plant succession to continue, with emphasis on mountain shrub, basin big sagebrush/lemon scurfpea, aspen, and other unique or important vegetation types.

Fire Management				
Management Objective: To use prescribed fire as a management tool to help meet multiple use resource management goals; and to provide cost-effective protection from wildfire to life, property, and resource values				
No Action Alternative	**Alternative 1**	**Alternative 2**	**Alternative 3**	**Proposed JMH CAP**
Fire Management Implementation Plan: Fire prescriptions identified in the Fire Management Implementation Plan for BLM-Administered Public Lands in the State of Wyoming would be implemented. The plan would be reviewed and updated as necessary to be consistent with federal wildland fire policy and the National Fire Plan.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Fire prescriptions identified in the Fire Management Implementation Plan for BLM-Administered Public Lands in the State of Wyoming would be implemented. The plan would be reviewed and updated as necessary to be consistent with federal wildland fire policy and the National Fire Plan.
Wildland and Prescribed Fire: Wildland and prescribed fires would be managed in all vegetation types to maintain or improve biological diversity and the overall health of the public lands.	Same as No Action Alternative	Prescribed burns would not be considered. Wildland fire would be managed within and outside prescription areas to improve biological diversity and the overall health of the public lands.	Same as No Action Alternative	Same as No Action Alternative: Wildland and prescribed fires would be managed in all vegetation types to maintain or improve biological diversity and the overall health of the public lands.
Fire Suppression: Full fire suppression would be applied for basin big sagebrush/lemon scurfpea vegetation associations.	Same as No Action Alternative	Limited fire suppression would be applied for basin big sagebrush/lemon scurfpea vegetation associations.	Same as No Action Alternative	Same as No Action Alternative: Full fire suppression would be applied for basin big sagebrush/lemon scurfpea vegetation associations.

Water Resources Management
Management Objective: To stabilize and conserve soils; increase vegetative production; maintain or improve surface and groundwater quality; and to protect, maintain, or improve wetlands, floodplains, and riparian areas

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Water Quality: Land uses and surface disturbing activities would be designed to reduce erosion and to maintain or improve water quality.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Land uses and surface disturbing activities would be designed to reduce erosion and to maintain or improve water quality.
The area within 500 feet of wetlands, riparian areas, and 100-year floodplains, and within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities.	The area within 250 feet of wetlands, riparian areas, and 100-year floodplains, and within 50 feet of the edge of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities.	The area within ¼ mile of wetlands, riparian areas, and 100-year floodplains would be avoidance areas for surface disturbing activities.	The area within 500 feet to ¼ mile of wetlands, riparian areas, and 100-year floodplains would be avoidance areas for surface disturbing activities. The appropriate distance would be determined on a case-by-case basis.	Same as No Action Alternative: The area within 500 feet of wetlands, riparian areas, and 100-year floodplains, and within 100 feet of the edge of the inner gorge of intermittent and large ephemeral drainages would be avoidance areas for surface disturbing activities.
Activities in these areas could be allowed if a site-specific analysis determined that no unacceptable impacts would occur to 100-year floodplains, wetlands, riparian areas, or water quality, and a plan to mitigate impacts to water quality were approved.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Activities in these areas could be allowed if a site-specific analysis determined that no adverse impacts would occur to 100-year floodplains, wetlands, riparian areas, or water quality, and a plan to mitigate impacts to water quality were approved.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Permanent Facilities: The 100-year floodplains, wetlands, and riparian areas would be closed to new permanent facilities (e.g., storage tanks, structure pits, etc.).	New permanent facilities would be allowed in floodplains provided there were no practicable alternatives (Executive Order (EO) 11988), and appropriate mitigation measures would be implemented.	Same as No Action Alternative	New permanent facilities that would enhance the protection and management of 100-year floodplains, wetlands, and riparian areas would be considered.	Same as Alternative 3: *New permanent facilities that would enhance the protection and management of 100-year floodplains, wetlands, and riparian areas would be considered.*
Proposals for linear crossings in 100-year floodplains, wetlands, and riparian areas would be considered on a case-by-case basis.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Proposals for linear crossings in 100-year floodplains, wetlands, and riparian areas would be considered on a case-by-case basis.
Erosion Control: Areas with highly erodible soils would be avoidance areas for surface disturbing activities unless site-specific analysis determined that soil degradation would not occur and that water quality would not be adversely affected.	Same as No Action Alternative	Surface disturbing activities would be prohibited in areas of highly erodible soils or that would be difficult to reclaim.	Same as No Action Alternative	Same as No Action Alternative: Areas with highly erodible soils would be avoidance areas for surface disturbing activities unless site-specific analysis determined that soil degradation would not occur and that water quality would not be adversely affected.
When applicable, erosion control plans would be required as part of surface disturbing project proposals.	Same as No Action Alternative	No Similar Action	Same as No Action Alternative	Same as No Action Alternative: When applicable, erosion control plans would be required as part of surface disturbing project proposals.
Colorado River Salinity Control: BLM would participate with federal, state, and local government agencies to develop and implement salinity control plans for the Colorado River Basin.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: BLM would participate with federal, state, and local government agencies to develop and implement salinity control plans for the Colorado River Basin.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Wetlands and Floodplains: Wetlands and floodplains would be managed in accordance with EO 11988, EO 11990, and Section 404 of the Clean Water Act.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Wetlands and floodplains would be managed in accordance with EO 11988, EO 11990, and Section 404 of the Clean Water Act.
Projects to improve the ecological integrity of the dunal ponds would be considered for development on BLM-administered public lands.	Same as No Action Alternative	Specific actions would be implemented to protect the ecological integrity of the dunal ponds and other ecologically important ephemeral wetlands not covered under Section 404 of the Clean Water Act.	Same as Alternative 2	Same as No Action Alternative: Projects to improve the ecological integrity of the dunal ponds would be considered for development on BLM-administered public lands.
Riparian Management Exclosures: Existing riparian management exclosures would be maintained or modified, and new exclosures would be developed for enhancement of wildlife habitat.	Existing exclosures could be removed and the area made available for livestock grazing; new exclosures would be considered only if they would benefit commodity uses.	Existing exclosures would be maintained, and new exclosures would be considered only if they would benefit preservation of sensitive resources.	Same as No Action Alternative	Existing riparian management exclosures could be maintained and/or modified based on site-specific analysis. Where site-specific analysis determined they no longer served their purpose, they could also be removed. New exclosures could be developed if they would benefit resources.
Exclosures would be closed to livestock grazing.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Exclosures would be closed to livestock grazing.
Fluid Mineral Wells: Water wells constructed to provide water for drilling of fluid mineral wells (oil, gas, or coalbed gas wells) would be constructed in compliance with BLM regulations for resource protection (43 CFR 3162.5).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Water wells constructed to provide water for drilling of fluid mineral wells (oil, gas, or coalbed gas wells) would be constructed in compliance with BLM regulations for resource protection (43 CFR 3162.5).

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Hydrogeologic investigations would be required where there was a reasonable expectation that surface water features were in connection with geologic formations being dewatered.				Hydrogeologic investigations would be required where there was a reasonable expectation that surface water features were in connection with geologic formations being dewatered.
Mitigation measures would be implemented, as needed, to protect surface waters.				Mitigation measures would be implemented, as needed, to protect surface waters.
Appropriate measures would be applied to protect groundwater quality and prevent co-mingling of aquifers (Appendix 6).				Appropriate measures would be applied to protect groundwater quality and prevent co-mingling of aquifers (Appendix 6).
Aquifer Recharge Areas: Aquifer recharge areas (Map 61) would be managed to maintain or enhance recharge volume and groundwater quality by limiting road density and surface occupancy.	Aquifer recharge areas (Map 61) would be managed to maintain or enhance recharge volume and groundwater quality by limiting the amount of impermeable surfaces in the recharge areas.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Aquifer recharge areas (Map 61) would be managed to maintain or enhance recharge volume and groundwater quality by limiting road density and surface occupancy.
No similar action	No similar action	Studies would be conducted to better define aquifer recharge area boundaries.	Studies would be conducted on a case-by-case basis to better define aquifer recharge area boundaries. Studies would be done primarily in relation to specific projects.	Same as Alternative 3: Studies would be conducted on a case-by-case basis to better define aquifer recharge area boundaries. Studies would be done primarily in relation to specific projects.

Wild Horses Management

Management Objective: To protect, maintain, and control viable, healthy herds of wild horses in the Divide Basin Herd Management Area (HMA) at Appropriate Management Levels (AML) while retaining their free-roaming nature; provide adequate habitat for free-roaming wild horses through management consistent with principles of multiple use and environmental protection; and provide opportunity for the public to view wild horses

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Wild Horse Herd Management Area Boundaries and Appropriate Management Levels:				
The Divide Basin Wild Horse HMA boundaries (Map 62) would remain unchanged and the AML would be maintained at 415–600 horses.	Same as No Action Alternative	The Divide Basin Wild Horse HMA boundaries (Map 62) would be modified to exclude the JMH CAP planning area. The AML would be maintained at 415–600 horses.	The Divide Basin Wild Horse HMA boundaries (Map 62) would be expanded to include the entire JMH CAP planning area. The AML would be maintained at 415–600 horses.	Same as No Action Alternative: The Divide Basin Wild Horse HMA boundaries (Map 62) would remain unchanged, and the AML would be maintained at 415–600 horses.
No similar action	No similar action	No similar action	No more than 100 horses of the AML would be allowed in the expansion area.	No similar action
Activity and Monitoring Plans:				
In conformance with the Green River RMP objectives for vegetation management, a site-specific activity plan would be prepared and implemented for the Divide Basin Wild Horse HMA to ensure adequate forage is available to support the AML of 415–600 horses.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: In conformance with the Green River RMP objectives for vegetation management, a site-specific activity plan would be prepared and implemented for the Divide Basin Wild Horse HMA to ensure adequate forage is available to support the AML of 415–600 horses.
A monitoring program would be developed to support wild horse herd management decisions.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	A monitoring program would be developed to support wild horse herd management decisions.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Water Developments: Water developments would be considered to maintain or improve resource conditions and/or enhance wild horse herd distribution and manage forage utilization.	Same as No Action Alternative	No water developments for wild horse management would be constructed.	Water developments would be provided, as needed, to improve wild horse herd distribution and manage forage utilization.	Same as Alternative 3: Water developments would be provided, as needed, to improve wild horse herd distribution and manage forage utilization.
Water developments would be allowed within sensitive wildlife habitats in conformance with wildlife objectives.	Same as No Action Alternative	No similar action	Water developments within sensitive wildlife habitats would be considered only if wildlife habitat and resource conditions were improved or maintained.	Same as Alternative 3: *Water developments within sensitive wildlife habitats would be considered only if wildlife habitat and resource conditions were improved or maintained.*
Compatibility with special status plant species would be required.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: Compatibility with special status plant species would be required.
Gathering Plan: A selective gathering plan would be developed and implemented to remove excess horses from inside and outside the HMA to maintain the existing AMLs.	Same as No Action Alternative	A gathering plan would be developed and implemented to remove wild horses from the JMH CAP planning area.	Same as No Action Alternative	Same as No Action Alternative: A selective gathering plan would be developed and implemented to remove excess horses from inside and outside the HMA to maintain the existing AMLs.
Gathering cycles would vary by gathering plan objectives, resource conditions, and needs.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: Gathering cycles would vary by gathering plan objectives, resource conditions, and needs.
Fertility control would be initiated only if necessary.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: Fertility control would be initiated only if necessary.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Public Education: Public education and interpretation for the public enjoyment of wild horse herds in the Divide Basin HMA would be provided through interpretive signs and access sites for viewing horses.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: Public education and interpretation for the public enjoyment of wild horse herds in the Divide Basin HMA would be provided through interpretive signs and access sites for viewing horses.

Livestock Grazing Management
Management Objective: To improve forage production and ecological conditions for the benefit of livestock use while providing for other resource values

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Guidelines for Livestock Grazing Management: The Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management would apply to all livestock grazing activities on public lands (Appendix 10).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management would apply to all livestock grazing activities on public lands (Appendix 10).
If livestock grazing were determined to be a factor for any allotment that did not meet the Wyoming BLM Standards for Healthy Rangelands, appropriate actions (as determined by an interdisciplinary BLM team in consultation with stakeholders) would be implemented.				If livestock grazing were determined to be a factor for any allotment that did not meet the Wyoming BLM Standards for Healthy Rangelands, appropriate actions (as determined by an interdisciplinary BLM team in consultation with stakeholders) would be implemented.
The BLM staff would work with livestock operators and interested publics to determine the most appropriate methods for meeting the standards.				The BLM staff would work with livestock operators and interested publics to determine the most appropriate methods for meeting the standards.
Significant progress toward meeting the standards would be made within a reasonable time frame (subject to climatic variability and other constraints).				Significant progress toward meeting the standards would be made within a reasonable time frame (subject to climatic variability and other constraints).

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Rangeland and Riparian Habitat: Appropriate actions for improving degraded rangeland and riparian habitat (i.e., meeting Wyoming Standards for Healthy Rangelands) could include, but would not be limited to, reduction of permitted AUMs, modified turnout dates, livestock water developments, range improvements, modified grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Appropriate actions for improving degraded rangeland and riparian habitat (i.e., meeting Wyoming Standards for Healthy Rangelands) could include, but would not be limited to, reduction of permitted AUMs, modified turnout dates, livestock water developments, range improvements, modified grazing periods, growing season rest, riparian pastures, exclosures, implementation of forage utilization levels, and livestock conversions.
No similar action	Reductions of active AUMs would not be implemented unless it was the only appropriate action for meeting the Wyoming Standards for Healthy Rangelands.	No similar action	No similar action	No similar action
No similar action	No similar action	Modified turnout dates would be the primary method for meeting the Wyoming Standards for Healthy Rangelands.	No similar action	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Forage Utilization Levels: Forage utilization levels for upland and riparian species would be in accordance with individual allotment management plans.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Forage utilization levels for upland and riparian species would be in accordance with individual allotment management plans.
Determination of forage utilization levels would be based on PFC Guidelines, BLM reference handbooks, and professional judgment (Appendix 10).				Determination of forage utilization levels would be based on PFC Guidelines, BLM reference handbooks, and professional judgment (Appendix 10).
Livestock Water Developments and Range Improvements: Livestock water developments and range improvements would be considered to maintain or improve resource conditions and/or enhance livestock distribution.	Livestock water developments and range improvements would be considered to enhance livestock production.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Livestock water developments and range improvements would be considered to maintain or improve resource conditions and/or enhance livestock distribution.
Compatibility with special status plant species would be required.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Compatibility with special status plant species would be required.
No similar action	No similar action	Livestock water developments and range improvements proposed in sensitive wildlife habitat would be considered only if the habitat and resource conditions were improved.	Livestock water developments and/or range improvements proposed in sensitive wildlife habitat would be considered only if the habitat and resource conditions were maintained or improved.	Same as Alternative 3: *Livestock water developments and/or range improvements proposed in sensitive wildlife habitat would be considered only if the habitat and resource conditions were maintained or improved.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Salt or Mineral Supplements: Salt or mineral supplements would not be allowed within 500 feet of natural water sources and related riparian habitat and historic and scenic trails unless analysis showed that watershed, riparian, and wildlife values, or the integrity of trails would not be adversely affected.	Salt or mineral supplements would not be allowed within 250 feet of riparian habitat and historic and scenic trails, unless analysis showed that watershed, riparian, and wildlife values, or the integrity of trails would not be adversely affected.	Salt or mineral supplements would not be allowed within 1/2 mile of riparian habitat, historic and scenic trails, areas inhabited by special status plant species, or other sensitive areas.	Salt or mineral supplements would not be allowed within 1/4 mile of riparian habitat, historic and scenic trails, areas inhabited by special status plant species, or other sensitive areas, unless analysis showed that watershed, riparian, and wildlife values, or the integrity of trails would not be adversely affected.	Same as No Action Alternative: Salt or mineral supplements would not be allowed within 500 feet of natural water sources and related riparian habitat and historic and scenic trails unless analysis showed that watershed, riparian, and wildlife values, or the integrity of trails would not be adversely affected.
No salt or mineral supplements would be allowed in areas of special status plant species or other sensitive areas.	Same as No Action Alternative	No similar action	No similar action	Same as No Action Alternative: No salt or mineral supplements would be allowed in areas of special status plant species or other sensitive areas.
No similar action	No similar action	No similar action	No similar action	*Placement of salt blocks at least 500 feet away from wells, troughs, and other human-made water sources would be encouraged to better distribute livestock.*

Vegetation Management
Management Objective: To maintain or enhance vegetation community health, composition, and diversity to meet watershed, wild horse, wildlife, and livestock grazing resource management objectives; and to provide for plant diversity (desired plant communities)

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Status Plant Species: Potential habitat of special status plant species' communities on federal land or on split estate lands would require searches for the plant species prior to approving any project or activity. Should species be found, all disruptive activities would be halted until species-specific protective measures were developed and implemented. For listed species, protective measures would be developed and implemented with the U.S. Fish and Wildlife Service (USFWS).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Potential habitat of special status plant species' communities on federal land or on split estate lands would require searches for the plant species prior to approving any project or activity. Should species be found, all disruptive activities would be halted until species-specific protective measures were developed and implemented. For listed species, protective measures would be developed and implemented with the USFWS.
Special status plant species potential habitat areas would be areas of controlled surface use (CSU) for surface disturbing activities.	Same as No Action Alternative	Surface disturbing activities would be prohibited in special status plant species potential habitat areas.	Same as No Action Alternative	Same as No Action Alternative: Special status plant species potential habitat areas would be areas of controlled surface use (CSU) for surface disturbing activities.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Known locations of special status plant species (Map 15) would be protected and closed to— • Surface disturbing activities that could adversely affect the plants or their habitat • Location of new mining claims (withdrawal from mineral location and entry under the land laws would be pursued) • Mineral material sales • All off-road vehicular use, including those vehicles used for geophysical exploration activities, surveying, etc. • Use of explosives and blasting.	Known locations of Wyoming BLM sensitive plant species (Map 15) would be avoidance areas for surface disturbing activities.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Known locations of special status plant species (Map 15) would be protected and closed to— • Surface disturbing activities that could adversely affect the plants or their habitat • Location of new mining claims (withdrawal from mineral location and entry under the land laws would be pursued) • Mineral material sales • All off-road vehicular use, including those vehicles used for geophysical exploration activities, surveying, etc. • Use of explosives and blasting.
Known locations of special status plant species would be open to consideration for mineral leasing with no surface occupancy requirements.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Known locations of special status plant species would be open to consideration for mineral leasing with no surface occupancy requirements.
Locations of federally listed, proposed, or candidate species would be avoided or closed to surface disturbing activities depending on coordination with the USFWS.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Locations of federally listed, proposed, or candidate species would be avoided or closed to surface disturbing activities depending on coordination with the USFWS.
Rights-of-Way Limitations: Areas where Wyoming BLM sensitive plant species are known to exist, and/or have potential habitat, would be ROW avoidance areas (Map 8).	Same as No Action Alternative	Actual plant locations, and/or potential habitat, of Wyoming BLM sensitive plant species would be ROW exclusion areas (Map 27).	Same as Alternative 2	Same as No Action Alternative: Areas where Wyoming BLM sensitive plant species are known to exist, and/or have potential habitat, would be ROW avoidance areas (Map 49).

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Exceptions could be granted by the Authorized Officer if analysis showed that there was no adverse impact to the plant populations.	Same as No Action Alternative	Exceptions would not be considered.	Same as No Action Alternative	Same as No Action Alternative: Exceptions could be granted by the Authorized Officer if analysis showed that there was no adverse impact to the plant populations.
Fire Suppression: Fire suppression vehicular activities would be limited to existing roads and trails in special status plant species habitat (Map 15). A site-specific analysis would be prepared for all fire management activities around special status plant species sites to determine the appropriate fire management response.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Fire suppression vehicular activities would be limited to existing roads and trails in special status plant species habitat (Map 15). A site-specific analysis would be prepared for all fire management activities around special status plant species sites to determine the appropriate fire management response.
Threatened and Endangered Plant Species: Potential habitat for listed, proposed, or candidate threatened and endangered plant species would be surveyed prior to any surface disturbance or depletion of surface water sources. If any listed plant species were identified, formal consultation with the USFWS would occur, and management prescriptions would be developed on a case-by-case basis.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Potential habitat for listed, proposed, or candidate threatened and endangered plant species would be surveyed prior to any surface disturbance or depletion of surface water sources. If any listed plant species were identified, formal consultation with the USFWS would occur, and management prescriptions would be developed on a case-by-case basis.
Invasive Species: EO 13112 regarding invasive species would be followed.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: EO 13112 regarding invasive species would be followed.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
The introduction of invasive species would be prevented and monitored, and populations would be controlled in a cost-effective and environmentally sound manner. Public education on invasive species and their control would be promoted. All surface disturbing activities would be subject to best management practices (Appendix 6) that would eliminate or severely reduce the potential for introducing invasive species.				The introduction of invasive species would be prevented and monitored, and populations would be controlled in a cost-effective and environmentally sound manner. Public education on invasive species and their control would be promoted. All surface disturbing activities would be subject to best management practices (Appendix 6) that would eliminate or severely reduce the potential for introducing invasive species.
Forest and Woodland Health: Management of conifer and aspen communities would be designed to promote forest and woodland health. Old decadent trees may be left standing or downed to provide cover or other habitat for wildlife (e.g., Animal Inn).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Management of conifer and aspen communities would be designed to promote forest and woodland health. Old decadent trees may be left standing or downed to provide cover or other habitat for wildlife (e.g., Animal Inn).

Wildlife Habitat Management
Management Objective: To maintain, improve, or enhance the biological diversity of wildlife species while ensuring healthy ecosystems; restore disturbed or altered habitat, with the objective of attaining desired native plant communities, while providing for wildlife needs and soil stability; and to the extent possible, provide suitable wildlife habitat and forage to support the Wyoming Game and Fish Department (WGFD) strategic plan population objectives

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Habitat Management Plan: Habitat management plans would be developed, as needed, for sensitive and/or highly developed and disturbed areas to mitigate wildlife habitat losses.	Same as No Action Alternative	A Habitat Management Plan would be prepared for the entire planning area to mitigate wildlife habitat losses.	Same as No Action Alternative	Same as No Action Alternative: Habitat management plans would be developed, as needed, for highly developed and disturbed areas to mitigate wildlife habitat losses.
Habitat management plans would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives.	Same as No Action Alternative	The habitat management plan would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives.	Same as No Action Alternative	Same as No Action Alternative: Habitat management plans would include habitat expansion efforts, threatened and endangered species reintroduction, and population goals and objectives.
To the extent possible, suitable wildlife habitat and forage would be provided to support the WGFD Strategic Plan objectives.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: To the extent possible, suitable wildlife habitat and forage would be provided to support the WGFD Strategic Plan objectives.
Changes in the WGFD planning objective levels would be considered based on habitat capability, availability, and site-specific analysis.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Changes in the WGFD planning objective levels would be considered based on habitat capability, availability, and site-specific analysis.
Water Developments: Wildlife water developments would be considered on a case-by-case basis to maintain or improve wildlife habitat and resource conditions.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Wildlife water developments would be considered on a case-by-case basis to maintain or improve wildlife habitat and resource conditions.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Status Wildlife Species:				
Potential habitat of special status wildlife species on federal land or on split estate lands would require searches for the species prior to approving any project or activity.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Potential habitat of special status wildlife species on federal land or on split estate lands would require searches for the species prior to approving any project or activity.
Should species be found, all disruptive activities would be halted until species-specific protective measures could be implemented.	Only locations of federally listed, proposed, or candidate species would require species-specific protection measures as developed with the USFWS.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Should species be found, all disruptive activities would be halted until species-specific protective measures developed with the USFWS could be implemented.
Special status species' habitat would be protected from degradation, and BLM would take proactive measures to improve habitat character on an as needed basis, in accordance with BLM 6840 policy and Section 7 of the Endangered Species Act.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Special Status Species' habitat would be protected from degradation and BLM would take proactive measures to improve habitat character on an as needed basis, in accordance with BLM 6840 policy and Section 7 of the Endangered Species Act.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Sensitive Habitat: Crucial winter range or sensitive habitats, birthing areas, the connectivity area (migration corridor), nesting sites, and sensitive fisheries habitats would be maintained or improved. This would be accomplished by maintaining habitat or reducing habitat loss or alteration, improving habitat where possible, and by applying appropriate mitigation requirements (e.g., distance and seasonal limitations, rehabilitation) to all appropriate activities. Exceptions could be provided on a case-by-case basis should exception criteria (Appendix 4) be met. Mitigation requirements would be determined on a case-by-case basis.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Crucial winter range or sensitive habitats, birthing areas, the connectivity area (migration corridor), nesting sites, and sensitive fisheries habitats would be maintained or improved. This would be accomplished by maintaining habitat or reducing habitat loss or alteration, improving habitat where possible, and by applying appropriate mitigation requirements (e.g., distance and seasonal limitations, rehabilitation) to all appropriate activities. Exceptions could be provided on a case-by-case basis should exception criteria (Appendix 4) be met. Mitigation requirements would be determined on a case-by-case basis.
Predator Damage Control: The BLM would continue to coordinate with APHIS–Wildlife Services (WS) and review its annual management plan for animal damage control activities on public lands.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The BLM would continue to coordinate with APHIS-Wildlife Services (WS) and review its annual management plan for animal damage control activities on public lands.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Proposed animal damage control activities not compatible with BLM planning and management prescriptions or objectives for other resource activities and uses would be identified on a case-by-case basis. APHIS-WS would be requested to amend or adjust the plan accordingly.	Same as No Action Alternative	Proposed animal damage control activities not compatible with BLM planning and management prescriptions or objectives for other resource activities and uses would be identified on a case-by-case basis. BLM would determine appropriate planning strategies, with input from APHIS-WS.	Same as Alternative 2	Same as Alternative 2: *Proposed animal damage control activities not compatible with BLM planning and management prescriptions or objectives for other resource activities and uses would be identified on a case-by-case basis. BLM would determine appropriate planning strategies, with input from APHIS-WS.*
APHIS-WS would determine the appropriate animal damage control methods in coordination with BLM.	Same as No Action Alternative	Non-lethal animal damage control for livestock protection would be allowed. Lethal animal damage control would be allowed only if it would benefit wildlife.	Non-lethal control would be emphasized but lethal methods would be allowed for animal damage control for both livestock and wildlife.	Emphasis would be placed on non-lethal methods. Control techniques and methods would be discussed at an annual meeting.
No similar action	No similar action	The JMH CAP planning area would be designated as a "Restricted Control Area" for predator control in coordination with APHIS-WS.	Same as Alternative 2	Same as Alternative 2: *The JMH CAP planning area would be designated as a "Restricted Control Area" for predator control in coordination with APHIS-WS.*
Greater Sage-Grouse Leks, Nesting and Early Brood-rearing Habitat: Surface occupancy (long-term or permanent aboveground facilities) would be controlled within ¼ mile of greater sage-grouse leks (Map 7).	Same as No Action Alternative	No similar action	Surface occupancy (long-term or permanent aboveground facilities) would be prohibited within ½ mile of greater sage-grouse leks (Map 39).	*Surface occupancy (long-term or permanent aboveground facilities) would be controlled near (usually within ¼ mile) greater sage-grouse leks (Map 50) unless adverse impacts could be mitigated. Distances would be subject to change on a case-by-case basis depending on applicable scientific research and site-specific analysis.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	Surface occupancy (long-term or permanent aboveground facilities) would be prohibited in greater sage-grouse concentration areas (Map 28).	No similar action	No similar action
Disruptive activities would avoid occupied greater sage-grouse leks from 8:00 p.m. to 8:00 a.m. daily.	Same as No Action Alternative	No similar action	No similar action	Same as No Action Alternative: Disruptive activities would avoid occupied greater sage-grouse leks from 8:00 p.m. to 8:00 a.m. daily.
No similar action	No similar action	Disruptive activities would avoid occupied greater sage-grouse leks and concentration areas 24 hours daily.	No similar action	No similar action
No similar action	No similar action	No similar action	Disruptive activities would avoid occupied greater sage-grouse leks and within ½ mile of nesting/brood-rearing areas from sunset to 9:00 a.m. daily.	No similar action
Disruptive activities would avoid occupied greater sage-grouse leks from, usually, February 1 through June 30. The actual area to be avoided, usually within ¼ to ½ mile of the lek, and appropriate seasonal limitations would be determined on a case-by-case basis.	No similar action	No similar action	Disruptive activities would avoid occupied greater sage-grouse leks from, usually, March 1 through May 15. The actual area to be avoided, usually within ¼ to ½ mile of the lek, and appropriate seasonal limitations would be determined on a case-by-case basis.	Disruptive activities would avoid occupied greater sage-grouse leks, from, usually, March 1 through May 15. The actual area to be avoided and appropriate time frame would be determined on a case-by-case basis depending on applicable scientific research and site-specific analysis.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	Seasonal limitations for disruptive activities would be determined on a case-by-case basis.	No similar action	No similar action	No similar action
Seasonal limitations on surface disturbing and disruptive activities (usually from February 1 through July 31) would apply up to 2 miles from greater sage-grouse leks (nesting and early brood-rearing habitat) on a case-by-case basis (Map 7).	Seasonal limitations on surface disturbing and disruptive activities (usually from March 15 through July 15) would apply within actual nesting and early brood-rearing habitat up to 1 mile from greater sage-grouse leks on a case-by-case basis (Map 16).	No similar action	Seasonal limitations on surface disturbing and disruptive activities (usually from March 15 through July 15) would apply within actual nesting and early brood-rearing habitat up to 2 miles from greater sage-grouse leks on a case-by-case basis (Map 39).	*Seasonal limitations on surface disturbing and disruptive activities (usually from March 15 through July 15) would apply in nesting and early brood-rearing habitat on a case-by-case basis (Map 50).*
Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within 2 miles of greater sage-grouse leks on an as needed basis.	Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within 1 mile of greater sage-grouse leks on an as needed basis.	Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within greater sage-grouse concentration areas on an as needed basis.	Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within 2 miles of greater sage-grouse leks on an as needed basis.	*Nesting and early brood-rearing habitats would be protected from habitat degradation, and measures would be taken to improve habitat quality within the areas identified on Map 50, on an as needed basis.*
Greater Sage-Grouse Winter Concentration Areas: Disruptive activities would be prohibited in greater sage-grouse winter concentration areas from November 15 through April 30.	No similar action	No similar action	No similar action	No similar action
Greater Sage-Grouse Winter Range: No similar action	No similar action	Surface occupancy (long-term or permanent aboveground facilities) would be prohibited in greater sage-grouse winter range (Map 28).	No similar action	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	No similar action	Disruptive activities would be prohibited in greater sage-grouse winter range usually from November 15 through March 15 (Map 39). These areas are subject to change based on new data and scientific information.	Same as Alternative 3: *Disruptive activities would be prohibited in greater sage-grouse winter range usually from November 15 through March 15 (Map 50). These areas are subject to change based on new data and scientific information.*
All Greater Sage-Grouse Habitats (Leks, Nesting, Early Brood-Rearing, and Winter Range): Seasonal limitations may be excepted, provided criteria in the Procedures for Processing Proposals for Land Use Authorizations in Areas of Seasonal Restriction (Appendix 4) can be met, and appropriate mitigation can be implemented (Appendix 6), as determined by BLM in coordination with commodity users and other appropriate entities.	No similar action	No similar action	Same as No Action Alternative	Same as No Action Alternative: Seasonal limitations may be excepted, provided criteria in the Procedures for Processing Proposals for Land Use Authorizations in Areas of Seasonal Restriction (Appendix 4) can be met, and appropriate mitigation can be implemented (Appendix 6), as determined by BLM in coordination with commodity users and other appropriate entities.
Avoidance areas may vary depending on natural topographic barriers, terrain, vegetation structure and cover, type of activity, line of sight distance, habitat needs, etc.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Avoidance areas may vary depending on natural topographic barriers, terrain, vegetation structure and cover, type of activity, line of sight distance, habitat needs, etc.
Greater sage-grouse habitats would be protected from habitat degradation, and measures would be taken to improve habitat on an as needed basis in accordance with BLM 6840 policy.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Greater sage-grouse habitats would be protected from habitat degradation, and measures would be taken to improve habitat on an as needed basis in accordance with BLM 6840 policy.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	No similar action	No similar action	*The management practices in greater sage-grouse habitats would be designed to limit direct loss of habitat and to prevent habitat degradation. Surface disturbing and disruptive activities would avoid these habitats.*
No similar action	No similar action	No similar action	No similar action	Mitigation of adverse effects (e.g., noise, traffic) on all habitats would be determined and applied on a case-by-case basis.
Maintenance and Operational Activities in Greater Sage-Grouse Habitats:				
No similar action	No similar action	No similar action	In greater sage-grouse habitats, surface disturbing maintenance and operational activities would require mitigation measures or development plans. These mitigation measures or development plans would be based on local situations on a case-by-case basis.	Same as Alternative 3: *In greater sage-grouse habitats, surface disturbing maintenance and operational activities would require mitigation measures or development plans. These mitigation measures or development plans would be based on local situations on a case-by-case basis.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Big Game Winter Range: Disruptive activities would be prohibited in big game (elk, deer, and antelope) crucial winter range between November 15 and April 30 (Map 7).	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Disruptive activities would be prohibited in big game (elk, deer, and antelope) crucial winter range between November 15 and April 30 (Map 51).
Seasonal limitations may be excepted, provided criteria in the Procedures for Processing Applications in Areas of Seasonal Restriction (Appendix 4) can be met and appropriate mitigation can be implemented (as determined by BLM in coordination with commodity users).	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Seasonal limitations may be excepted, provided criteria in the Procedures for Processing Applications in Areas of Seasonal Restriction (Appendix 4) can be met and appropriate mitigation can be implemented (as determined by BLM in coordination with commodity users).
No similar action	No similar action	Vegetative character of big game (elk, deer, and antelope) crucial winter range would be restored on a case-by-case basis using BLM reclamation and monitoring practices (Appendix 9).	No similar action	No similar action
Big Game Birthing Areas: Surface disturbing and disruptive activities and the amount of habitat disturbed would be limited in big game birthing areas from May 1 through June 30.	No similar action	Surface disturbing activities would be prohibited in big game birthing areas.	Same as No Action Alternative	Same as the No Action Alternative: Surface disturbing and disruptive activities and the amount of habitat disturbed would be limited in big game birthing areas from May 1 through June 30.
No similar action	No similar action	Vegetative character of big game birthing areas would be restored on a case-by-case basis using BLM reclamation and monitoring practices (Appendix 9).	No similar action	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Black-Footed Ferret: Black-footed ferret searches would be completed according to current USFWS protocol within 1 year prior to conducting any surface disturbing or disruptive activities in all or portions of potential ferret habitat areas (i.e., prairie dog colonies 200 acres or greater in size).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Black-footed ferret searches would be completed according to current USFWS protocol within 1 year prior to conducting any surface disturbing or disruptive activities in all or portions of potential ferret habitat areas (i.e., prairie dog colonies 200 acres or greater in size).
Should a ferret be found, all disruptive activities would be stopped until protective measures developed with the USFWS could be implemented.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Should a ferret be found, all disruptive activities would be stopped until protective measures developed with the USFWS could be implemented.
BLM would cooperate with USFWS and WGFD on any black-footed ferret reintroduction within the JMH CAP planning area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: BLM would cooperate with USFWS and WGFD on any black-footed ferret reintroduction within the JMH CAP planning area.
No similar action	Measures would be taken, as appropriate, to reduce potential raptor perches in and around prairie dog towns and colonies.	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1: *Measures would be taken, as appropriate, to reduce potential raptor perches in and around prairie dog towns and colonies.*
Mountain Plover: Mountain plover surveys would be required prior to authorizing any surface disturbing or disruptive activities in potential plover habitat. Surveys would be conducted within suitable mountain plover habitat by a qualified biologist using a protocol determined by the Rock Springs BLM biologist.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Mountain plover surveys would be required prior to authorizing any surface disturbing or disruptive activities in potential plover habitat. Surveys would be conducted within suitable mountain plover habitat by a qualified biologist using a protocol determined by the Rock Springs BLM biologist.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	Active mountain plover nesting aggregation areas (Map 17) would be avoidance areas for surface disturbing and disruptive activities from April 10 to July 10.	Active mountain plover nesting aggregation areas (Map 17) would be avoidance areas for surface disturbing and disruptive activities within ¼ mile of the area from April 10 to July 10.	Same as Alternative 2	Same as Alternative 2: *Active mountain plover nesting aggregation areas (Map 17) would be avoidance areas for surface disturbing and disruptive activities within a ¼ mile of the area from April 10 to July 10.*
No similar action	No similar action	Traffic speeds on BLM roads during the brood-rearing period (June and July) would be limited within ¼ mile of nesting concentration areas. Exceptions or other mitigation measures could be applied on a case-by-case basis, as determined by BLM in coordination with commodity users.	Same as Alternative 2	Same as Alternative 2: *Traffic speeds on BLM roads during the brood-rearing period (June and July) would be limited within ¼ mile of nesting concentration areas. Exceptions or other mitigation measures could be applied on a case-by-case basis, as determined by BLM in coordination with commodity users.*
No similar action	No similar action	Measures (i.e., avoidance, burying power lines, installation of anti-perch devices, and exclusion for artificial nest structures) would be taken to limit hunting perches or nest sites for avian predators within ¼ mile of nesting aggregation areas.	Same as Alternative 2	Same as Alternative 2: *Measures (e.g., avoidance, burying power lines, installation of anti-perch devices, and exclusion for artificial nest structures) would be taken to limit hunting perches or artificial nest sites for avian predators within ¼ mile of nesting aggregation areas.*
Game Fish and Special Status Fish Species: Seasonal limitations for surface disturbing activities to protect game and special status fish species during spawning would be applied as necessary.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Seasonal limitations for surface disturbing activities to protect game and special status fish species during spawning would be applied as necessary.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Raptor Nesting Sites: Active and historic raptor nesting sites (Map 17) would be protected and managed for continued nesting activities.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Active and historic raptor nesting sites (Map 17) would be protected and managed for continued nesting activities.
Permanent or high profile structures would be prohibited within a specified distance of active raptor nests. Distance would be determined on a case-by-case basis and would depend on the raptor species involved, natural topographic barriers, line-of-sight distances, etc.	No similar action	Permanent or high profile structures would be prohibited within ½ to 1 mile of active raptor nests.	Same as No Action Alternative	Same as No Action Alternative: Permanent or high profile structures would be prohibited within a specified distance of active raptor nests. Distance would be determined on a case-by-case basis and would depend on the raptor species involved, natural topographic barriers, line-of-sight distances, etc.
Temporary disturbances associated with placement of facilities, such as pipelines, and other actions such as seismic activities could be allowed within ½ to 1 mile of active raptor nests.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Temporary disturbances associated with placement of facilities, such as pipelines, and other actions such as seismic activities, could be allowed within ½ to 1 mile of active raptor nests.
Disruptive activities would be seasonally restricted within a ½- to 1-mile radius of occupied raptor nesting sites.	Disruptive activities during the nesting season (February 1 to July 31) would be prohibited within a ¼-mile radius of occupied raptor nest sites.	Disruptive activity restrictions within the specified distance (usually within a ½- to 1-mile radius) of occupied raptor nests would be applied year-round.	Same as No Action Alternative	Same as No Action Alternative: Disruptive activities would be seasonally restricted within a ½- to 1-mile radius of occupied raptor nesting sites.
Raptor nest surveys would be conducted within a 1-mile radius or linear distance of proposed surface uses or activities proposed during raptor nesting season (see Table 2-3 for dates, which vary by species).	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Raptor nest surveys would be conducted within a 1-mile radius or linear distance of proposed surface uses or activities proposed during raptor nesting season (see Table 2-3 for dates, which vary by species).

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Different species of raptors may require different types of protective measures.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Different species of raptors may require different types of protective measures.
Introduction and Re-introduction of Species: BLM would cooperate with the WGFD in studies for the introduction and re-introduction of native and non-native (game) wildlife and fish species.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: BLM would cooperate with the WGFD in studies for the introduction and re-introduction of native and non-native (game) wildlife and fish species.
BLM will cooperate with the USFWS in studies for, and reintroduction of, special status species.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: BLM would cooperate with the USFWS in studies for, and reintroduction of, special status species.

HERITAGE RESOURCES MANAGEMENT
Management Objective: To expand the opportunities for scientific study, and educational and interpretive uses of cultural and paleontological resources; protect and preserve important cultural and paleontological resources and/or their historic record for future generations; resolve conflicts between cultural/paleontological resources and other resource uses; and to foster opportunities for Native Americans to use heritage resources

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Heritage Resources Protection: Heritage resources in special management areas would remain protected through specific and general management actions (mitigation requirements and site-specific management prescriptions) associated with designated ACECs, WSAs, and National Historic Trails (Appendix 7). Heritage resources are found in the Greater Sand Dunes ACEC (including Boars Tusk and Crookston Ranch), White Mountain Petroglyphs ACEC, South Pass Historic Landscape ACEC (including the Oregon Trail, California Trail, Mormon Pioneer Trail, and Pony Express Route), and the Tri-Territory Marker (Map 2). Other areas may be identified and included in the future pursuant to procedures, including public participation, outlined in Appendix 7.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Heritage resources in special management areas would remain protected through specific and general management actions (mitigation requirements and site-specific management prescriptions) associated with designated ACECs, WSAs, and National Historic Trails (Appendix 7). Heritage resources are found in the Greater Sand Dunes ACEC (including Boars Tusk and Crookston Ranch), White Mountain Petroglyphs ACEC, South Pass Historic Landscape ACEC (including the Oregon Trail, California Trail, Mormon Pioneer Trail, and Pony Express Route), and the Tri-Territory Marker (Map 2). Other areas may be identified and included in the future pursuant to procedures, including public participation, outlined in Appendix 7.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Protection of Scientific Values: Sites that are eligible for inclusion in the National Register of Historic Places (NRHP) because of their scientific value would be protected. Preservation of the scientific information would be the preferred mitigation method should any such sites have to be impacted by other activities. These sites include Finley, Krmpotich, and Eden-Farson archaeological sites in the paleosol deposition area. Other sites would be included as they are located, recorded, and evaluated for NRHP eligibility.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Sites that are eligible for inclusion in the NRHP because of their scientific value would be protected. Preservation of the scientific information would be the preferred mitigation method should any such sites have to be impacted by other activities. These sites include Finley, Krmpotich, and Eden-Farson archaeological sites in the West Sand Dunes Archaeological District (paleosol deposition area). Other sites would be included as they are located, recorded, and evaluated for NRHP eligibility.
No similar action	No similar action	Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area.	Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area.	No similar action
No similar action	No similar action	The Greater Sand Dunes ACEC would be managed as a Research Natural Area (RNA). Surface disturbing activities would be prohibited.	Surface disturbing activities would be evaluated on a case-by-case basis following appropriate archeological inventory.	*The paleosol deposition area would be designated a separate special management area called the West Sand Dunes Archaeological District to be managed for scientific study, education, and interpretation.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	No similar action	Subsurface inventory would be required by remote sensing techniques, hand-dug test excavations, or mechanical testing prior to issuing any surface disturbing authorizations in the paleosol deposition area. Subsurface testing would require an approved testing plan and BLM-SHPO consultation. Mitigation may include research-oriented data recovery excavation.	Same as Alternative 3: *Subsurface inventory would be required by remote sensing techniques, hand-dug test excavations, or mechanical testing prior to issuing any surface disturbing authorizations in the West Sand Dunes Archaeological District. Subsurface testing would require an approved testing plan and BLM-SHPO consultation. Mitigation may include research oriented data recovery excavation.*
No similar action	No similar action	The Finley Site would be nominated to the NRHP under the Register's History of American Archaeology context and under the Earliest Americans context.	Same as Alternative 2	Same as Alternative 2: The Finley Site would be nominated to the NRHP under the Register's History of American Archaeology context and under the Earliest Americans context.
No similar action	No similar action	The Krmpotich Site would be nominated to the NRHP under the Register's Earliest Americans context.	Same as Alternative 2	Same as Alternative 2: The Krmpotich Site would be nominated to the NRHP under the Register's Earliest Americans context.
The confidential location of the Finley, Krmpotich, Eden-Farson, and other archeological sites as appropriate would be maintained. Interpretive information would be developed and made available at the Rock Springs Field Office (RSFO).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The confidential location of Finley, Krmpotich, Eden-Farson, and other archaeological sites as appropriate would be maintained. Interpretive information would be developed and made available at the RSFO.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
National Register Eligible Sites: All NRHP eligible historic sites would be protected through provisions of the National Historic Preservation Act (NHPA) and Archaeological Resources Protection Act (ARPA).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: All NRHP eligible historic sites are protected through provisions of the NHPA and ARPA.
No similar action	No similar action	Eligible historic properties would be nominated for inclusion in the NRHP.	Several high-profile historic properties would be nominated for inclusion in the NRHP.	Nominations to the NRHP of other eligible sites would be determined on a case-by-case basis.
Pursuant to the Protocol agreement between the BLM and the Wyoming SHPO (Appendix 7), sites eligible for inclusion in the NRHP under Criterion D because of their scientific information content would be surrounded by a 100-foot avoidance area.	Same as No Action Alternative	Sites eligible for inclusion in the NRHP under Criterion D because of their scientific information content would be surrounded by a 300-foot avoidance area.	Same as No Action Alternative	Same as No Action Alternative: Pursuant to the Protocol agreement between the BLM and the Wyoming SHPO (Appendix 7), sites eligible for inclusion in the NRHP under Criterion D, because of their scientific information content, would be surrounded by a 100-foot avoidance area.
No similar action	No similar action	BLM would require development proponents to fund preparation of NRHP nominations on a case-by-case basis.	Same as Alternative 2	BLM may request development proponents to fund preparation of NRHP nominations on a case-by-case basis. Sites with uncommon values may require different case-specific management.
Native American Sites: Native American respected places (located generally in the Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, and Joe Hay Rim areas) and the Indian Gap Trail would be protected by provisions of the NHPA and the American Indian Religious Freedom Act (AIRFA).	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Native American respected places (located generally in the Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, and Joe Hay Rim areas) and the Indian Gap Trail would be protected by provisions of the NHPA and the AIRFA.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Tribal leaders would be consulted and Traditional Cultural Properties (TCP), including respected places, would be protected.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Consultation with tribal leaders concerning management of all identified TCPs, sacred sites, and respected places would be conducted on a regular basis.
No similar action	No similar action	This would include negotiating for related viewsheds with tribal leaders, the State Historic Preservation Officer, and development proponents.	This would include negotiating for related foreground viewsheds with tribal leaders, the State Historic Preservation Officer, and development proponents.	*When activity was proposed in the vicinity of TCPs, sacred sites, and/or eligible respected places, management would be developed through consultation with Tribal leaders, SHPO, and the activity proponent based on the characteristics of the site and the proposed activity. Mitigation may include siting activity in such a way as to protect the foreground viewshed of the area of concern, if appropriate.*
Surface disturbance and disruptive activities would be prohibited within a minimum of 100 feet of respected places. Actual distance would be determined on a case-by-case basis.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Surface disturbance and disruptive activities would be prohibited within a minimum of 100 feet of respected places. Actual distance would be determined on a case-by-case basis.
No similar action	No similar action	The Indian Gap Trail would be researched and mapped, and a trail interpretive plan would be developed.	Same as Alternative 2	Same as Alternative 2: The Indian Gap Trail would be researched and mapped, and a trail interpretive plan would be developed.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Expansion Era Roads and Associated Sites: Expansion Era Roads would be managed similar to the historic trails covered in the Oregon, Mormon Pioneer National Historic Trails Management Plan (BLM 1986), with prescriptions from that plan applied, although the ¼-mile protective setback might not always be applicable. Management actions would include development of activity plans with the objective of preserving the historical integrity of significant NRHP contributing segments of the historic roads.	Same as No Action Alternative	Expansion era roads and associated sites eligible for the NRHP would be protected from activities that would affect their NRHP eligibility status. Activities would be limited within ¼ mile of these roads and sites.	Same as Alternative 2	Same as No Action Alternative: Expansion Era Roads would be managed similar to the historic trails covered in the Oregon, Mormon Pioneer National Historic Trails Management Plan (BLM 1986), with prescriptions from that plan applied, although the ¼-mile protective setback might not always be applicable. Management actions would include development of activity plans with the objective of preserving the historical integrity of significant NRHP contributing segments of the historic roads.
Activity plans may include NRHP nomination of those Expansion Era Roads that qualify.	No similar action	Expansion Era Roads and associated sites eligible for the NRHP would be nominated for listing.	Contributing portions of Expansion Era Roads and associated sites eligible for the NRHP would be nominated for listing.	Same as No Action Alternative: Activity plans may include NRHP nomination of those Expansion Era Roads that qualify.
Historic Livestock Management Sites: Some historic livestock management sites may be eligible for inclusion in the NRHP within the context of the development of pastoral agriculture in Wyoming and the Rocky Mountain region. There is no special management or recognition provisions for these sites under existing management.	NRHP eligible historic livestock management sites would be protected from surface disturbing activities within an area determined on a case-by-case basis.	NRHP eligible historic livestock management sites would be protected from surface disturbing activities within a minimum area of 300 feet.	NRHP eligible historic livestock management sites would be protected from surface disturbing activities within a minimum area of 100 feet.	Same as Alternative 3: *NRHP eligible historic livestock management sites would be protected from surface disturbing activities within a minimum area of 100 feet.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Native and Euro-American Sites: Important historic and archaeological sites within the context of early contact between Native and Euro-American peoples would be protected by provisions of the NHPA.	Interpretive signs would be installed where development occurs adjacent to unprotected sites of interest.	An interpretive program, based on BLM and Native American investigation of detailed historical context, would be developed and implemented. Sites would be protected through formal listing in the NRHP and/or through inclusion in the Backcountry Byways program.	An interpretive program on Native and Euro-American peoples would be developed and implemented. Sites would be included in the NRHP and/or Backcountry Byways program on a case-by-case basis.	Same as Alternative 3: An interpretive program on Native and Euro-American peoples would be developed and implemented. Sites would be included in the NRHP and/or Backcountry Byways program on a case-by-case basis.
Paleontological Sites: Documented significant fossil sites would be avoided to protect scientific and educational values. Management guidelines included in BLM Handbook 8270-1 would apply.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Documented significant fossil sites would be avoided to protect scientific and educational values. Management guidelines included in BLM Handbook 8270-1 would apply.
If impacts were unavoidable, the site would be evaluated by a BLM-approved paleontologist (and may require a paleontological survey) who would coordinate with the BLM in developing a mitigation plan that may include activity monitoring, fossil documentation, recovery, and storage in a federally approved repository.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	If impacts were unavoidable, the site would be evaluated by a BLM-approved paleontologist (and may require a paleontological survey) who would coordinate with the BLM in developing a mitigation plan that may include activity monitoring, fossil documentation, recovery, and storage in a federally approved repository.
Unique Geologic Features: The Boars Tusk area (90 acres) would be closed to surface disturbing activities, mineral material sales, and use of explosives and blasting.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Boars Tusk area (90 acres) would be closed to surface disturbing activities, mineral material sales, and use of explosives and blasting.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
The area within a ½-mile radius of Boars Tusk (including Boars Tusk) would be closed to blasting and explosive charges.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The area within a ½-mile radius of Boars Tusk (including Boars Tusk) would be closed to blasting and explosive charges.
The Boars Tusk area would be open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the site. Facilities would be prohibited from being developed on the geologic feature.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Boars Tusk area would be open to consideration of activities such as fencing, interpretive signs, or transportation barriers to ensure protection of the site. Facilities would be prohibited from being developed on the geologic feature.
The Boars Tusk area would be a ROW avoidance area, and OHV use would be limited to designated roads and trails.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Boars Tusk area would be a ROW avoidance area, and OHV use would be limited to designated roads and trails.
The Boars Tusk and approximately 1,400 acres of BLM-administered public lands in the surrounding area would be closed to any surface mining activity but open to consideration of subsurface mining methods. Activities or ancillary facilities related to subsurface mining would be prohibited.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Boars Tusk and approximately 1,400 acres of BLM-administered public lands in the surrounding area would be closed to any surface mining activity but open to consideration of subsurface mining methods. Activities or ancillary facilities related to subsurface mining would be prohibited.
No similar action	No similar action	The Pinnacles Geographic Area (about 8,900 acres) would be an exclusion area for ROWs.	Same as Alternative 2	*The Pinnacles Geologic Feature (about 1,300 acres) would be an exclusion area for ROWs. Surface use would also be controlled.*
No similar action	No similar action	No similar action	No similar action	*The Pinnacles Proper would be closed to surface disturbance.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Mineral leasing and mineral locations actions would be as described in the minerals section for this alternative.	Mineral leasing and mineral locations actions would be as described in the minerals section for this alternative.	Mineral leasing and mineral locations actions would be as described in the minerals section for this alternative.	Mineral leasing and mineral locations actions would be as described in the minerals section for this alternative.	Mineral leasing and mineral locations actions would be as described in the minerals section for this alternative.
No similar action	No similar action	No similar action	No similar action	*The use of explosives on and within ½ mile of the Pinnacles Geologic Feature would be prohibited.*
No similar action	No similar action	The VRM classification for the Pinnacles Geographic Area (8,900 acres) would be Class I.	Same as Alternative 2	*The VRM classification for the Pinnacles Geologic Feature would be Class II.*
Vehicular travel within ½ mile of the Pinnacles Geologic Feature, and including the features, would be limited to designated roads and trails.	Same as No Action Alternative	The area within ½ mile of the Pinnacles Geologic Feature, and including the features, would be closed to vehicular travel.	Same as Alternative 2	Same as No Action Alternative: Vehicular travel within ½ mile of the Pinnacles Geologic Feature, and including the features, would be limited to designated roads and trails.
Tri-Territory Marker: The Tri-Territory Marker would be an exclusion area for ROWs and would be closed to surface disturbing activities.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Tri-Territory Marker would be an exclusion area for ROWs and would be closed to surface disturbing activities.
The Tri-Territory Marker would be withdrawn from mineral location and closed to coal and sodium exploration.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Tri-Territory Marker would be withdrawn from mineral location and closed to coal and sodium exploration.
The Tri-Territory Marker would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The Tri-Territory Marker would be open for consideration of activities such as fencing, interpretive signs, or barriers to ensure protection of the area.

TRAVEL, ACCESS, and REALTY MANAGEMENT
Management Objective: To manage the public lands to support the goals and objectives of other resource programs; respond to public demand for land use authorizations; and to acquire administrative and public access where necessary

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Transportation Planning: No similar action	No similar action	A transportation plan would be developed for the JMH CAP planning area in coordination with local governments and users.	Same as Alternative 2	Same as Alternative 2: A transportation plan would be developed for the JMH CAP planning area in coordination with local governments and users.
No similar action	No similar action	The transportation plan could include mitigation measures (such as offsite placement of facilities, remote control monitoring, restricted or prohibited surface use including road construction, multiple wells from a single pad, central tank batteries/facilities, pipelines and power lines concentrated in specific areas, based on site-specific analysis) in areas subject to seasonal limitations, and CSU and NSO stipulations.	Same as Alternative 2	Same as Alternative 2: The transportation plan could include mitigation measures (such as offsite placement of facilities, remote control monitoring, restricted or prohibited surface use including road construction, multiple wells from a single pad, central tank batteries/facilities, pipelines and power lines concentrated in specific areas, based on site-specific analysis) in areas subject to seasonal limitations and CSU and NSO stipulations.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Transportation planning would provide for appropriate ingress, egress, and access routes that would follow BLM guidelines and road classifications defined in the Green River RMP (Appendix 12). Arterial roads would be high-traffic volume roads that provide primary access to the planning area; collector roads would provide access to large blocks of land; local roads would serve smaller areas; and resource roads would provide access to resource locations.	Same as No Action Alternative	Transportation planning would provide for appropriate access routes to provide maximum protection for crucial habitats and sensitive resources. Transportation planning would consider— • Limiting points of access for all activities to minimize disruption • Closing and rehabilitating unused roads and trails (subject to county review of existing ROWs needs), and those causing resource damage. (Transportation plan and affected maps would be corrected to reflect closed roads and trails.)	Transportation planning would provide for appropriate access routes to provide maximum protection for crucial habitats and sensitive resources. Transportation planning would consider— • Access restrictions such as seasonal road closures and/or gating to limit frequency of access in crucial wildlife habitat • Re-routing or rehabilitating existing roads and trails (subject to county review of existing ROWs needs) causing resource damage.	Transportation planning would provide for access to achieve multiple use goals while providing maximum protection for crucial habitats and sensitive resources. Transportation planning would consider— • Access restrictions such as seasonal road closures and/or gating to limit frequency of access in crucial wildlife habitat • Re-routing or rehabilitating existing roads and trails (subject to county review of existing ROWs needs) causing resource damage.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
		• Avoiding construction of stream or riparian area crossings in sensitive areas and closing unnecessary crossings. Exceptions may be granted if crossings would reduce adverse effects, benefit area objectives, and reduce miles of road and/or frequency of use. Bridges (instead of culverts) would be required for perennial stream crossings • Limiting development zones that would be accessed by designated routes.	• Concentrating stream and riparian area crossings in key locations to avoid disruptions. Exceptions may be granted if crossings would reduce adverse effects, benefit area objectives, and reduce miles of road (and/or frequency of use). Bridges may be required on Pacific, Jack Morrow, Parnell, and Rock Cabin creeks • Posting speed limits, as necessary, to protect wildlife and public health and safety, and to meet area objectives.	• Concentrating stream and riparian area crossings in key locations to avoid disruptions. Exceptions may be granted if crossings would reduce adverse effects, benefit area objectives, and reduce miles of road (and/or frequency of use). Bridges may be required on Pacific, Jack Morrow, Parnell, and Rock Cabin creeks.
Travel Management Plan: No similar action	A travel management plan would not be developed. Travel management would follow the OHV designations in the Steamboat Mountain and White Mountain areas.	In conjunction with the overall transportation planning for JMH, travel management plans would be developed for the two northern calving areas and the Steamboat Mountain, White Mountain, and Essex Mountain areas to control access in these areas.	Same as Alternative 2	Same as Alternative 2: In conjunction with the overall transportation planning for JMH, travel management plans would be developed for the two northern calving areas and the Steamboat Mountain, White Mountain, and Essex Mountain areas to control access in these areas.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Road Installations: Proposed roads and improvements would follow the Green River RMP management objectives and applicable BLM guidelines.	Proposed roads and improvements would follow the Green River RMP transportation guidelines and the Green River Basin Advisory Council (GRBAC) transportation recommendations.	Proposed roads and improvements would follow the Green River RMP management objectives and applicable BLM guidelines until a JMH Transportation Plan was prepared and approved.	Same as Alternative 2	Same as Alternative 2: Proposed roads and improvements would follow the Green River RMP management objectives and applicable BLM guidelines until a JMH Transportation Plan was prepared and approved.
No similar action	No similar action	Proposed roads and improvements for Steamboat Mountain and White Mountain would follow the guidelines specified in Appendix 12.	Same as Alternative 2	Same as Alternative 2: Proposed roads and improvements for Steamboat Mountain and White Mountain would follow the guidelines specified in Appendix 12.
No similar action	No similar action	Exceptions to the JMH Transportation Plan would be considered only if beneficial to natural and cultural resource values.	Exceptions to the JMH Transportation Plan would be considered if they included site-specific conditions that would minimize impacts on natural and cultural resource values.	Same as Alternative 3: Exceptions to the JMH Transportation Plan would be considered if they include site-specific conditions that would minimize impacts on natural and cultural resource values.
Geophysical Activities: Geophysical activities would be required to conform to the OHV Use designations of the Green River RMP.	No similar action	Geophysical activities would be required to conform to the OHV Use designations of the Green River RMP for those portions of the planning area outside of areas with no surface occupancy requirements, WSAs, ACECs, and other sensitive resource areas.	Same as Alternative 2	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	Geophysical and related detonation activities would be allowed throughout the planning area, subject to seasonal limitations and limitations for sensitive plant species locations.	Geophysical and related detonation activities would be excluded from areas with no surface occupancy requirements, WSAs, ACECs, and other sensitive resource areas. Seasonal limitations would apply.	Same as Alternative 2	The planning area would be open to geophysical exploration and related detonation activities, subject to appropriate mitigation and the same limitations applied to ROWs (Map 49). Exploration activities would be allowed in sensitive resource areas only if they could be performed with acceptable mitigation of impacts.
Geophysical exploration and related detonation activities would be prohibited in WSAs.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Geophysical exploration and related detonation activities would be prohibited in WSAs.
No similar action	No similar action	No similar action	No similar action	*Geophysical exploration (vehicles and detonation) activities would be prohibited within ½ mile of the Pinnacles Geologic Feature.*
Exceptions may be granted on a case-by-case basis subject to appropriate site-specific analysis and mitigation requirements.	No similar action	No similar action	Same as No Action Alternative	Same as No Action Alternative: Exceptions may be granted on a case-by-case basis subject to appropriate site-specific analysis and mitigation requirements.
Rights-of-Way: The planning area, with the exception of defined exclusion and avoidance areas, would be open to considering grants of ROWs.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The planning area, with the exception of defined exclusion and avoidance areas, would be open to considering grants of ROWs.
The ROW limitations listed in the Green River RMP would apply as applicable to utilities and other realty actions (Map 8).	The extent of ROW exclusion and avoidance areas would be as shown on Map 18.	The extent of ROW exclusion and avoidance areas would be as shown on Map 27.	The extent of ROW exclusion and avoidance areas would be as shown on Map 40.	*The extent of ROW exclusion and avoidance areas would be as shown on Map 49.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Linear Rights-of-Way: No similar action	No similar action	To the extent possible, utility and transportation ROWs would be located to coincide with existing roads, trails, and other ROW or easement concentration areas where they would not create safety hazards or conflict with other resource objectives.	Same as Alternative 2	Same as Alternative 2: To the extent possible, utility and transportation ROWs would be located to coincide with existing roads, trails, and other ROW or easement concentration areas where they would not create safety hazards or conflict with other resource objectives.
Winter Access: Winter access would be subject to seasonal road closures.	Winter access would be limited only by weather and road conditions.	Winter access would be limited to specific roads identified for winter use.	Same as Alternative 2	Same as No Action Alternative: Winter access would be subject to seasonal road closures.
No similar action	No similar action	Where winter access on roads, other than those identified for winter access in the transportation plan, was necessary, routes would be determined on a case-by-case basis.	Where winter access on roads, other than those identified for winter access in the transportation plan, was necessary, routes would be determined on a case-by-case basis in accordance with transportation planning requirements.	Same as Alternative 3: Where winter access on roads, other than those identified for winter access in the transportation plan, was necessary, routes would be determined on a case-by-case basis in accordance with transportation planning requirements.
Plowing of roads would be considered on a case-by-case basis.	Plowing of roads would be allowed as needed.	Plowing of roads would be allowed for emergencies only.	Same as Alternative 1	Same as No Action Alternative: Plowing of roads would be considered on a case-by-case basis.
Off-Highway Vehicle Management: Open to OHV use: Greater Sand Dunes Recreation Area.	Open to OHV use: Same as No Action Alternative	Open to OHV use: Same as No Action Alternative	Open to OHV use: Same as No Action Alternative	Open to OHV use: Same as No Action Alternative: Greater Sand Dunes Recreation Area.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Closed to OHV use: WSAs, Crookston Ranch, Boars Tusk, Special Status Plants, Oregon Buttes ACEC, and White Mountain Petroglyphs ACEC.	Closed to OHV use: Same as No Action Alternative	Closed to OHV use: Same as No Action Alternative	Closed to OHV use: Same as No Action Alternative	Closed to OHV use: Same as No Action Alternative: WSAs, Crookston Ranch, Boars Tusk, Special Status Plants, Oregon Buttes ACEC, and White Mountain Petroglyphs ACEC.
No similar action	No similar action	Closed to OHV use: Raptor nest sites (plus 1/2- to 1-mile buffer), paleosol deposition area, Pinnacles Geographic Area, slopes>20 percent, geologic hazards, greater sage-grouse concentration areas, elk and mule deer birthing areas, and wetlands, floodplains, and riparian areas.	Closed to OHV use: Raptor nest sites (plus 1/2 to 1 mile buffer), Pinnacles Geographic Area, slopes>25 percent and greater sage-grouse leks (plus ½-mile buffer).	*Closed to OHV use:* *Pinnacles Geologic Feature*
OHV use limited to designated roads and trails: Red Desert Watershed, Steamboat Mountain ACEC, and South Pass Historic Landscape ACEC (visible portion).	OHV use limited to designated roads and trails: South Pass Historic Landscape (visible portion) and the Pinnacles Geologic Feature.	OHV use limited to designated roads and trails: All of the planning area that is not designated as open or closed.	OHV use limited to designated roads and trails: Same as No Action Alternative	OHV use limited to designated roads and trails: Same as No Action Alternative: Red Desert Watershed, Steamboat Mountain ACEC, and South Pass Historic Landscape ACEC (visible portion).
OHV use limited to designated roads and trails: No similar action	OHV use limited to designated roads and trails: No similar action	OHV use limited to designated roads and trails: No similar action	OHV use limited to designated roads and trails: Cushion Plant Community ACEC.	OHV use limited to designated roads and trails: *South Pass Historic Landscape ACEC (portion not visible), cushion plant community, and Steamboat Mountain Management Area.*
OHV use limited to existing roads and trails: Remainder of planning area not designated as open, closed, or limited to designated roads and trails.	OHV use limited to existing roads and trails: Remainder of planning area not designated as open, closed, or limited to designated roads and trails.	OHV use limited to existing roads and trails: No similar action	OHV use limited to existing roads and trails: Remainder of planning area not designated as open, closed, or limited to designated roads and trails.	OHV use limited to existing roads and trails: Remainder of planning area not designated as open, closed, or limited to designated roads and trails.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
OHV use limited to seasonal access: Steamboat Mountain, elk and mule deer birthing and crucial winter range areas, antelope crucial winter range, greater sage-grouse leks (plus 2-mile buffer), and raptor nesting sites (plus ½- to 1-mile buffer) on an as needed basis.	OHV use limited to seasonal access: Raptor nesting sites (plus ¼-mile buffer), greater sage-grouse leks (plus 1-mile buffer) and mountain plover aggregation areas.	OHV use limited to seasonal access: Elk, mule deer, and antelope crucial winter range and mountain plover aggregation areas (plus ¼-mile buffer).	OHV use limited to seasonal access: Elk and mule deer birthing and crucial winter range areas, antelope crucial winter range and, greater sage-grouse leks (plus 2-mile buffer), mountain plover aggregation areas (plus ¼-mile buffer).	OHV use limited to seasonal access: Steamboat Mountain, Elk and mule deer birthing and crucial winter range areas, antelope crucial winter range, greater sage-grouse nesting habitat, and raptor nesting sites (plus ½- to 1-mile buffer) on an as needed basis.
Specific roads and trails may be closed to OHV use for public health and safety reasons, for restoration or remediation actions, or for other valid reasons.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Specific roads and trails may be closed to OHV use for public health and safety reasons, for restoration or remediation actions, or for other valid reasons.
Exceptions to closed or limited OHV designations may be granted by the authorized officer for such reasons as scientific purposes, emergency access needs, etc.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Exceptions to closed or limited OHV designations may be granted by the authorized officer for such reasons as scientific purposes, emergency access needs, etc.
Over-the-Snow Vehicles: Over-the-snow vehicles would be required to follow OHV use designations and BLM trails designated for snow vehicle access. Exceptions would be considered on a case-by-case basis.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Over-the-snow vehicles would be required to follow OHV use designations and BLM trails designated for snow vehicle access. Exceptions would be considered on a case-by-case basis.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Land Withdrawals and Exchanges: Withdrawals and exchanges identified in the Green River RMP would be pursued. Exchanges for state lands in WSAs and other special management areas would be considered to avoid conflicting management objectives in these areas. Exchanges would conform to the JMH planning objectives and actions. BLM acquisition of lands would be considered to facilitate various resource management objectives. The preferred method for acquisition would be through exchange. Land exchanges are considered discretionary and voluntary real estate transactions between the willing parties involved.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Withdrawals and exchanges identified in the Green River RMP would be pursued. Exchanges for state lands in WSAs and other special management areas would be considered to avoid conflicting management objectives in these areas. Exchanges would conform to the JMH planning objectives and actions. BLM acquisition of lands would be considered to facilitate various resource management objectives. The preferred method for acquisition would be through exchange. Land exchanges are considered discretionary and voluntary real estate transactions between the willing parties involved.
Ownership Adjustments: Aquatic, wetland, and riparian habitat would not be suitable for disposal unless opportunities exist for land exchanges of equal or greater value, including monetary and functional resource values.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Aquatic, wetland, and riparian habitat would not be suitable for disposal unless opportunities exist for land exchanges of equal or greater value, including monetary and functional resource values.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Access: Access to public, state, and private lands would be provided throughout the planning area and would be limited when necessary to protect public health and safety and to protect sensitive resources.	Access to public, state, and private lands would be provided throughout the planning area and would be limited on a case-by-case basis to protect sensitive resources only in areas of high development potential.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Access to public, state, and private lands would be provided throughout the planning area and would be limited when necessary to protect public health and safety and to protect sensitive resources.
Access would be guaranteed across public lands to landlocked private and state lands consistent with FLPMA.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Access would be guaranteed across public lands to landlocked private and state lands consistent with FLPMA.

RECREATION RESOURCES MANAGEMENT

Management Objective: To ensure the continued availability of outdoor recreational opportunities sought by the public, while providing for other resource values; to meet legal requirements for the health and safety of visitors; and to reduce conflicts between recreation and other types of resource uses

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Backcountry Byways: Recreation project plans would be developed for backcountry byways.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Recreation project plans would be developed for the backcountry byways.
Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for— 1) Red Desert viewpoint from dugway of Steamboat Mountain 2) Chicken Springs overlook	Same as No Action Alternative	Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for— 1) Red Desert viewpoint from dugway of Steamboat Mountain 2) Chicken Springs overlook 3) Steamboat Mountain 4) Oregon Buttes 5) Honeycomb Buttes 6) Indian Gap	Same as Alternative 2	Same as Alternative 2: Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for— 1) Red Desert viewpoint from dugway of Steamboat Mountain 2) Chicken Springs overlook 3) Steamboat Mountain 4) Oregon Buttes 5) Honeycomb Buttes 6) Indian Gap
Greater Sand Dunes Recreation Area: A recreation site plan would be prepared for expansion of the parking area and camping facilities in the Greater Sand Dunes Recreation Area. The plan would address public health and safety, resolving user conflicts, and protecting adjoining resources.	No similar action	No similar action	No similar action	Same as No Action Alternative: A recreation site plan would be prepared for expansion of the parking area and camping facilities in the Greater Sand Dunes Recreation Area. The plan would address public health and safety, resolving user conflicts, and protecting adjoining resources.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Recreation Project Plans: A recreation project plan and interpretive prospectus would be developed, as necessary, for— 1) Crookston Ranch historic site 2) Boars Tusk 3) Wild horse viewing areas 4) Oregon Buttes 5) Honeycomb Buttes 6) Steamboat Mountain 7) National Historic Trails 8) White Mountain Petroglyphs	Same as No Action Alternative	A recreation project plan and interpretive prospectus would be prepared and implemented for— 1) Crookston Ranch historic site 2) Boars Tusk 3) Oregon Buttes 4) Honeycomb Buttes 5) Steamboat Mountain 6) National Historic Trails 7) White Mountain Petroglyphs 8) Native American sites, including Indian Gap.	Same as Alternative 2	A recreation project plan and interpretive prospectus would be prepared and implemented for— 1) Crookston Ranch historic site 2) Boars Tusk 3) Wild horse viewing areas 4) Oregon Buttes 5) Honeycomb Buttes 6) Steamboat Mountain 7) National Historic Trails 8) White Mountain Petroglyphs 9) Native American sites, including Indian Gap.
Camping: Dispersed camping would be allowed within 200 feet of a water source where there were no conflicts with water quality and wildlife and livestock watering areas.	Same as No Action Alternative	Camping would be allowed in designated areas only. Parties of five or more would be required to have a group camping permit and to stay within designated group camping areas.	Camping would be allowed in designated areas only. Parties of 10 or more would be required to have a group camping permit and to stay within designated group camping areas.	Same as No Action Alternative: Dispersed camping would be allowed within 200 feet of a water source where there were no conflicts with water quality and wildlife and livestock watering areas.
Dispersed camping would be prohibited within 200 feet of a water source where there were conflicts with water quality and wildlife and livestock watering areas.	Same as No Action Alternative	No similar action	No similar action	Same as No Action Alternative: Dispersed camping would be prohibited within 200 feet of a water source where there were conflicts with water quality and wildlife and livestock watering areas.
Areas would be closed to camping throughout JMH if resource damage occurred.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Areas would be closed to camping throughout JMH if resource damage occurred.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Recreation Use Permits: Application for special recreation use permits would follow existing policy (permits could be issued through any Wyoming field office without review by the RSFO).	Same as No Action Alternative	Special recreation use permits for managed activities in the JMH CAP planning area would be issued and renewed, and fees would be collected through the RSFO.	Same as Alternative 2	Special recreation use permits would be reviewed and subject to recommendations made by the RSFO consistent with JMH Plan objectives prior to any use authorizations.
A Plan of Operation would be required for all commercial recreational operators and outfitters.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: A Plan of Operation would be required for all commercial recreational operators and outfitters.
Recreational Mining and Other Similar Activity: Recreational mining and other similar activity would be allowed throughout the planning area, except where closed or restricted by Wyoming DEQ Guideline No. 19 Noncoal: Non-commercial Recreation Panning and Dredging.	Same as No Action Alternative	Recreational mining and other similar activity would be prohibited in the planning area.	Recreational mining and other similar activity would be limited to a 5-acre site that would be designated in the Dickie Springs-Oregon Gulch Gold Placer Mining District area. A recreation site plan would be prepared and implemented to manage the site for recreational purposes.	*Recreational mining and other similar activity would be allowed in those parts of the planning area that are not withdrawn from mineral location or where such withdrawals would not be pursued.*
Continental Peak/South Pass Connecting Side Trail: No similar action	No similar action	The Continental Peak/South Pass Connecting Side Trail would be managed as a side trail to the existing Continental Divide National Scenic Trail (CDNST).	Same as Alternative 2	Same as Alternative 2: *The Continental Peak/South Pass Connecting Side Trail would be managed as a side trail to the existing Continental Divide National Scenic Trail (CDNST).*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	Management would be as described for the CDNST (BLM 1999). Existing primitive two-track roads, BLM roads that provide legal public access through certain private lands, segments of cross-country travel on BLM-administered public land, and an existing trail would be used as components of the CDNST. The existing primitive two-track roads and BLM road segments would continue to be open to motorized use. Cross-country travel routes would not be open to motorized use.	Same as Alternative 2	Same as Alternative 2: *Management would be as described for the CDNST (BLM 1999). Existing primitive two-track roads, BLM roads that provide legal public access through certain private lands, segments of cross-country travel on BLM-administered public land, and an existing trail would be used as components of the CDNST. The existing primitive two-track roads and BLM road segments would continue to be open to motorized use. Cross-country travel routes would not be open to motorized use.*

MINERALS AND ALTERNATIVE ENERGY RESOURCES MANAGEMENT

Management Objective: To maintain or enhance opportunities for mineral exploration and development while providing for other resource values

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Fluid Minerals Management				
Oil and Gas Leases: Suspended leases in the planning area would be reinstated.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	*Under the implementation, monitoring, and evaluation strategy, suspended leases in the planning area that were put in place during preparation of the JMH CAP would be reinstated within 3 years of signing the Record of Decision or earlier with an approved development plan (Appendix 17). In addition, portions of the planning area would be open to new leases, while others would be closed to new leasing (Map 54).*
No similar action	No similar action	No similar action	No similar action	*Nominations for new leases within the open portion of the planning area would be considered on a case-by-case basis using the implementation, monitoring, and evaluation process.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
As leases expire outside the core area, they would be considered for subsequent lease offerings; within the core area, they would be excluded from subsequent lease offerings.	As leases expire within the entire planning area, they would be considered for subsequent lease offerings.	As leases expire in non-sensitive resource areas, they would be considered for subsequent lease offerings; in sensitive resource areas (including the core area), they would be excluded from subsequent lease offerings.	As leases expire within the entire planning area, they would be considered for subsequent lease offerings on a case-by-case basis, unless monitoring of resource indicators under the adaptive management strategy showed they should not be offered for lease.	*As leases expire within portions of the planning area identified as open to future leasing, they would be considered for subsequent lease offerings on a case-by-case basis and include stipulations identified in Table 2-2, and through the monitoring of resource indicators under the implementation, monitoring, and evaluation management strategy. Twelve basic sensitive resources and uses would be used to evaluate these lands and provide the appropriate stipulations. These sensitive resources and uses may change or be added to in the future based on the implementation, monitoring, and evaluation process.*
The core area would be closed to new leasing.	The core area would be open to new leasing.	Same as No Action Alternative	The core area would be open to new leasing unless monitoring of resource indicators under the adaptive management strategy showed new leases should not be issued.	*A portion of the core area would be open to consideration of new leasing based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. The remainder of the core area would be closed to consideration of new leasing (Map 54).*
New leases would be issued outside the core area.	Same as No Action Alternative	New leases would be issued only in non-sensitive resource areas outside the core area.	New leases would be issued outside the core area unless monitoring of resource indicators under the adaptive management strategy showed new leases should not be issued.	*Portions of the planning area outside the core area would be open to new leases, based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts (Map 54).*
WSAs would be non-discretionary closure areas for oil and gas leasing.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: WSAs would be non-discretionary closure areas for oil and gas leasing.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	Funding would be pursued for lease buy-out and exchanges. Purchase or exchange of existing leases would be negotiated with willing leaseholders in areas that should be closed to leasing for protection of sensitive resources. Where existing leases in sensitive resource areas could not be exchanged or purchased, development would be allowed under valid existing rights. Existing surface structures, pipelines, and service roads would be reclaimed to pre-development conditions on lease buy-outs and exchanges. Congressional legislation would be required to authorize lease buy-outs.	No similar action	*Buy-out or exchange of existing leases from willing sellers may be considered on a case-by-case basis.* Congressional legislation would be required to authorize lease buyouts.
Lease Stipulations: Stipulations on new leases would be specified to protect other resources and land uses consistent with the Green River RMP. Lease stipulation categories include— 1) Surface disturbance limitations 2) Timing and access restrictions for development activity to protect wildlife 3) Protection of sensitive resources 4) No surface occupancy in designated areas (see Table 2-2 for applicable stipulations and associated acreages for this alternative).	Stipulations on new leases would address only legally mandated resource protection requirements, including the Endangered Species Act (see Table 2-2 for applicable stipulations and associated acreages for this alternative).	Stipulations on new leases would be specified to protect other resources and land uses (see Table 2-2 for applicable stipulations and associated acreages for this alternative).	Stipulations on new leases would be specified to protect other resources and land uses (see Table 2-2 for applicable stipulations and associated acreages for this alternative).	Stipulations on new leases would be specified to protect other resources and land uses (see Table 2-2 for applicable stipulations and associated acreages for this alternative).

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	No similar action	Additional stipulations on new leases may include provisions for imposing timing and sequencing of development activities based on monitoring of sensitive resource indicators. Emphasis would be on wildlife and wildlife habitat.	No similar action
No similar action	No similar action	No similar action	Monitoring data would be assessed, and appropriate management actions would be determined by an interdisciplinary BLM team (with input from stakeholders and other public entities). Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of non-native species, and recreation activities.	Same as Alternative 3: *Monitoring data would be assessed and appropriate management actions would be determined by an interdisciplinary BLM team (with input from stakeholders and other public entities). Lease stipulations may be adjusted or clarified based upon this data. Consideration would be given to such factors as weather, disease, drought, hunting pressure, introduction of non-native species, and recreation activities.*
Drilling Permits: Conditions of Approval (COA) for Applications for Permit to Drill (APD) would allow necessary impacts in order for development to be technically feasible or economically viable.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Conditions of Approval (COAs) for Applications for Permit to Drill (APDs) would allow necessary impacts in order for development to be technically feasible or economically viable.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
COAs for APDs would be based on site-specific analysis and would include general surface control, avoidance, and other requirements for mitigation of development impacts consistent with the Green River RMP.	COAs for APDs would be based on site-specific analysis and would include mitigation measures to protect other resources as required by the regulations for oil and gas development in 43 CFR §3100.	COAs for APDs would be based on site-specific analysis and would establish specific, necessary mitigation measures, not covered by stipulations, for resource and environmental protection, such as avoidance of sensitive resources, seasonal limitations, noise reduction, and remote control operations.	COAs for APDs would be based on site-specific analysis and would establish specific, necessary mitigation measures, not covered by stipulations, for resource and environmental protection (with emphasis on wildlife and wildlife habitat), such as mitigation of effects to sensitive resources, seasonal limitations, noise reduction, and remote control operations.	*COAs for APDs would be based on site-specific analysis and would establish specific, necessary mitigation measures, not covered by stipulations, for resource and environmental protection (with emphasis on all interdisciplinary values), such as mitigation of effects to sensitive resources, seasonal limitations, noise reduction, and remote control operations.*
Exceptions to lease stipulations and COAs would be allowed when site-specific analyses showed impacts to sensitive resources were within acceptable limits.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Exceptions to lease stipulations and COAs would be allowed when site-specific analyses showed impacts to sensitive resources were within acceptable limits.
Well spacing requirements for oil and gas resource protection would defer to the Wyoming Oil and Gas Conservation Commission guidance with consideration for surface resource values.	Well spacing requirements for oil and gas resource protection would defer to the Wyoming Oil and Gas Conservation Commission guidance without consideration for surface resource values.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Well spacing requirements for oil and gas resource protection would defer to the Wyoming Oil and Gas Conservation Commission guidance with consideration for surface resource values.
No similar action	No similar action	No similar action	COAs for timing limitations would be based on monitoring of sensitive resource indicators to ensure unacceptable impacts did not occur.	*COAs for timing limitations would be considered where consistent with lease rights and based on monitoring of sensitive resource indicators, under the implementation, monitoring, and evaluation strategy, to ensure unacceptable impacts did not occur.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Solid Minerals Management				
Exploration: Areas shown on Map 11 (including WSAs) would be closed to coal and sodium exploration, as identified in the Green River RMP.	The entire planning area (except for WSAs) would be open to coal and sodium exploration activities subject to avoidance and right-of-way limitations as needed.	The entire planning area would be closed to coal and sodium exploration activity.	Same as No Action Alternative	Areas shown on Map 55 (including WSAs) would be closed to coal and sodium exploration, as identified in the Green River RMP.
No similar action	No similar action	No similar action	The Cushion Plant Community ACEC and greater sage-grouse leks (with ½-mile buffer) would be closed to coal exploration.	No similar action
Exploration activities in open areas would be allowed on a case-by-case basis with mitigation measures to protect sensitive resources.	No similar action	No similar action	Exploration activities in open areas would be subject to appropriate mitigation and right-of-way limitations (Map 40).	Same as No Action Alternative: Exploration activities in open areas would be allowed on a case-by-case basis with mitigation measures to protect sensitive resources.
Steamboat Mountain ACEC (outside area with coal recommendation) would be closed to exploration.	No similar action	No similar action	Steamboat Mountain ACEC would be closed to exploration.	Same as No Action Alternative: Steamboat Mountain ACEC (outside area with coal recommendation) would be closed to exploration.
No similar action	No similar action	No similar action	No similar action	*The Steamboat Mountain Management Area (outside area with coal recommendation) would be closed to exploration.*
Leasing: Federal coal lands within the Coal Occurrence and Development Potential Area would be open to further consideration for coal leasing and development.	Same as No Action Alternative	No similar action	Same as No Action Alternative.	Same as No Action Alternative: Federal coal lands within the Coal Occurrence and Development Potential Area would be open to further consideration for coal leasing and development.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Areas closed to leasing would include the Sand Dunes WSA and the western part of the Greater Sand Dunes ACEC.	Same as No Action Alternative	Federal coal lands within the Coal Occurrence and Development Potential Area would be closed to leasing and development to protect other resource values in the planning area.	Same as No Action Alternative	Same as No Action Alternative: Areas closed to leasing would include the Sand Dunes WSA and the western part of the Greater Sand Dunes ACEC.
Areas acceptable for leasing for subsurface mining with no surface occupancy requirements would include Boars Tusk and Crookston Ranch.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: Areas acceptable for leasing for subsurface mining with no surface occupancy requirements would include Boars Tusk and Crookston Ranch.
Areas acceptable for leasing for subsurface mining with controlled surface use would include Steamboat Mountain ACEC, Tri-Territory Marker, raptor nesting sites and the eastern part of Greater Sand Dunes ACEC.	Areas available for leasing for subsurface mining with controlled surface use would include raptor nesting sites, Tri-Territory Marker and the eastern part of Greater Sand Dunes ACEC.	No similar action	Same as No Action Alternative	Same as No Action Alternative: Areas acceptable for leasing for subsurface mining and with controlled surface use would include Steamboat Mountain ACEC, Tri-Territory Marker, raptor nesting sites, and the eastern part of Greater Sand Dunes ACEC.
No similar action	No similar action	No similar action	No similar action	*Areas acceptable for leasing for subsurface mining with controlled surface use would include Steamboat Mountain Management Area.*
Leasing in big game habitat would be allowed, provided that adequate habitat and overall activity levels could be maintained.	No similar action	No similar action	Same as No Action Alternative	Same as No Action Alternative: Leasing in big game habitat would be allowed, provided that adequate habitat and overall activity levels could be maintained.
Additional areas could become acceptable for leasing consideration through future site-specific application of the coal screening process.	Same as No Action	No similar action	Same as No Action Alternative	Same as No Action Alternative: Additional areas could become acceptable for leasing consideration through future site-specific application of the coal screening process.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
		Locatable Minerals Management		
Locatable Mineral Withdrawals: Proposed withdrawals from locatable minerals identified in the Green River RMP would be pursued (Map 5). Other withdrawals could be pursued, as necessary.	Same as No Action Alternative	Withdrawals from mineral location would be pursued over the entire planning area (Map 34).	Same as No Action Alternative	Same as No Action Alternative: Proposed withdrawals from locatable minerals identified in the Green River RMP would be pursued (Map 53). Other withdrawals could be pursued as necessary.
No similar action	No similar action	No similar action	Withdrawals from mineral location would be pursued in the northern elk calving areas and the potential diamond development area of Steamboat Mountain ACEC.	*Withdrawals from mineral location would be pursued in the northern elk calving areas (aspen stands plus adjacent, potential aspen habitat), the potential diamond development area of Steamboat Mountain ACEC, and the Pinnacles Geologic Feature.*
No similar action	Withdrawal from mineral location would be pursued for Indian Gap.	No similar action	Withdrawals from mineral location would be pursued in areas with no surface occupancy requirements, including active raptor nest sites and Indian Gap.	No similar action
Withdrawals from mineral location under the coal and oil shale classifications would be revoked.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Withdrawals from mineral location under the coal and oil shale classifications would be revoked.
With the exception of withdrawn areas, the planning area would be open to mineral location.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: With the exception of withdrawn areas, the planning area would be open to mineral location.
A notice would be required for exploration activities when surface disturbance would be 5 acres or less and when less than 1,000 tons of presumed ore would be removed for testing.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: A notice would be required for exploration activities when surface-disturbance would be 5 acres or less and when less than 1,000 tons of presumed ore would be removed for testing.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
A plan of operations would be required when exploration exceeded notice level activity, for mining activities, or when material was extracted for commercial use.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: A plan of operations would be required when exploration exceeded notice level activity, for mining activities, or when material was extracted for commercial use.
A plan of operations would be required for all activities greater than casual use occurring within ACECs, WSAs, areas designated as "closed" to off-road vehicle use, and any lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: A plan of operations would be required for all activities greater than casual use occurring within ACECs, WSAs, areas designated as "closed" to off-road vehicle use, and any lands or waters known to contain federally proposed or listed threatened or endangered species or their proposed or designated critical habitat.
Salable Minerals Management				
Mineral Material Sales: Areas shown on Map 12 would be closed to mineral material sales. No similar action	Areas shown on Map 24 would be closed to mineral material sales No similar action	The entire planning area would be closed to mineral material sales (Map 35). No similar action	Areas shown on Map 46 would be closed to mineral material sales. The lava portion of the Steamboat Mountain ACEC would be closed to mineral material sales.	Areas shown on Map 58 would be closed to mineral material sales. Same as Alternative 3: *The lava portion of the Steamboat Mountain ACEC would be closed to mineral material sales.*
No similar action	No similar action	No similar action	No similar action	*The remainder of the Steamboat Mountain ACEC and the Steamboat Mountain Management Area would be open to mineral material sales only when required to meet other planning objectives within the planning area.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
No similar action	No similar action	No similar action	The area within ½ mile of greater sage-grouse leks would be closed to mineral material sales.	*The area within ¼ mile of greater sage-grouse leks would be closed to mineral material sales.* *Greater sage-grouse nesting habitat would be open to mineral material sales only if related disturbance and reclamation could occur during one field season (August 1–November 15) and the site could be returned (through reclamation efforts) to a condition usable by greater sage-grouse.*
No similar action	No similar action	No similar action	No similar action	*The Pinnacles Geologic Feature would be closed to mineral material sales.*
The remainder of the planning area would be open to mineral material sales where such activity would not cause unacceptable impacts (Map 12).	The remainder of the planning area would be open to mineral material sales where such activity would not cause unacceptable impacts (Map 24).	No similar action	The remainder of the planning area would be open to mineral material sales where such activity would not cause unacceptable impacts (Map 46).	The remainder of the planning area would be open to mineral material sales where such activity would not cause unacceptable impacts (Map 58).
Mining and reclamation plans would be required for use areas, and use and management would be in conformance with other resource objectives.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Mining and reclamation plans would be required for use areas, and use and management would be in conformance with other resource objectives.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Alternative Energy Management				
Alternative Energy Proposals: No similar action	The planning area would be open to alternative energy development, such as wind or solar farms, where development would comply with statutory resource protection standards.	The planning area would be closed to alternative energy development proposals.	The planning area would be open for consideration of alternative energy development proposals where such activity would not cause unacceptable impacts to sensitive resources. Transmission and utility lines and access roads would comply with ROW limitations and requirements of the JMH transportation plan.	Same as Alternative 3: *The planning area would be open for consideration of alternative energy development proposals where such activity would not cause unacceptable impacts to sensitive resources. Transmission and utility lines and access roads would comply with ROW limitations and requirements of the JMH transportation plan.*

VISUAL RESOURCES MANAGEMENT

Management Objective: To maintain or improve scenic values and visual quality; and to establish priorities for managing the visual resources in conjunction with other resource values

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
VRM Class I Areas: WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape.
Oregon Buttes ACEC and the western portion of Greater Sand Dunes ACEC, which fall within a WSA, would also be managed as a VRM Class I area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Oregon Buttes ACEC and the western portion of Greater Sand Dunes ACEC, which fall within a WSA, would also be managed as VRM Class I areas.
No similar action	No similar action	All ACECs (which includes Indian Gap), unique geologic features and landforms including Boars Tusk (plus a 1-mile buffer), Freighter Gap, portions of White Mountain, and the portion of the Red Desert Watershed within the planning area, would be managed as VRM Class I areas.	No similar action	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
VRM Class II Areas: The eastern portion of Greater Sand Dunes ACEC, South Pass Historic Landscape ACEC, White Mountain Petroglyphs ACEC, and areas adjacent to WSAs would be managed as VRM Class II areas (Map 13).	The South Pass Historic Landscape ACEC, Greater Sand Dunes ACEC, White Mountain Petroglyphs ACEC, and areas adjacent to WSAs would be managed as VRM Class II areas (Map 25).	No similar action	Same as No Action Alternative	Same as No Action Alternative: The eastern portion of Greater Sand Dunes ACEC, South Pass Historic Landscape ACEC, White Mountain Petroglyphs ACEC, and areas adjacent to WSAs would be managed as VRM Class II areas (Map 59).
The southern portion of Steamboat Mountain ACEC would be managed as a VRM Class II area (Map 13).	No similar action	No similar action	Steamboat Mountain ACEC would be managed as a VRM Class II area (Map 47).	*Steamboat Mountain ACEC would be managed as a VRM Class II area (Map 59).*
No similar action	No similar action	No similar action	No similar action	*The Steamboat Mountain Management Area would be managed as a VRM Class II area.*
No similar action	No similar action	All sensitive habitat areas, wetlands, riparian areas, and floodplains would be managed as VRM Class II areas (Map 36).	No similar action	No similar action
No similar action	No similar action	Split Rock would be managed as a VRM Class II area.	Unique geological features and landforms, including Indian Gap and Boars Tusk, Split Rock, portions of White Mountain, and the portion of the Red Desert Watershed within the planning area, would be managed as VRM Class II areas (Map 47).	*Unique geological features and landforms, including portions of White Mountain, Pinnacles Geological Feature, and the West Sand Dunes Archeological District, would be managed as VRM Class II areas (Map 59).*
No similar action	No similar action	The portions of the National Historic Trail and National Scenic Trails located within the planning area would be managed as VRM Class II areas (Map 36).	The portions of the National Historic Trail and National Scenic Trails within the planning area would be managed as VRM Class II areas (Map 47).	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
VRM Class III:				
Eden Valley, portions of White Mountain, Split Rock, and the portion of the Red Desert Watershed within the planning area would be managed as VRM Class III (Map 13).	No areas would be managed as VRM Class III.	All areas not managed as VRM Class I or II for this alternative would be managed as VRM Class III (Map 36).	Eden Valley would be managed as VRM Class III (Map 47).	Same as No Action Alternative: Eden Valley, portions of White Mountain, Split Rock and the portion of the Red Desert Watershed within the planning area would be managed as VRM Class III (Map 59).
The northern portion of Steamboat Mountain ACEC would be managed as a Class III area (Map 13).	No similar action	Same as No Action Alternative	No similar action	No similar action
VRM Class IV:				
All areas not managed as VRM Class I, II, or III for this alternative would be managed as VRM Class IV (Map 13).	All areas not managed as VRM Class I or II for this alternative would be managed as VRM Class IV (Map 25).	No areas would be managed as VRM Class IV.	All areas not managed as VRM Class I, II, or III for this alternative would be managed as VRM Class IV (Map 47).	All areas not managed as VRM Class I, II, or III for this alternative would be managed as VRM Class IV (Map 59).

MANAGEMENT OF SPECIAL MANAGEMENT AREAS AND OTHER MANAGEMENT AREAS
Management Objective: To maintain or enhance the resource values and characteristics for which the area was designated as a special management area

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
		Wilderness Study Areas		
Geophysical Activities: Geophysical exploration and related detonation activities would be prohibited.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Geophysical exploration and related detonation activities would be prohibited.
Rights-of-Way: No similar action	No similar action	These areas would be managed as ROW exclusion areas.	Same as Alternative 2	No similar action
OHV Use: These areas would be closed to OHV use.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: These areas would be closed to OHV use.
Leasable Fluid Minerals: These areas would be non-discretionary closure areas for fluid minerals leasing.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: These areas would be non-discretionary closure areas for fluid minerals leasing.
Leasable Solid Minerals: These areas would be closed to leasable solid minerals exploration and leasing.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: These areas would be closed to leasable solid minerals exploration and leasing.
Salable Minerals: These areas would be closed to mineral material sales.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: These areas would be closed to mineral material sales.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Locatable Minerals: A plan of operations would be required for all activities greater than casual use.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: A plan of operations would be required for all activities greater than casual use.
No similar action	No similar action	Withdrawals from mineral location would be pursued in the entire planning area.	No similar action	No similar action
VRM: These areas would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: These areas would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape.
		Oregon Buttes ACEC		
Geophysical Activities: Geophysical activities and related detonation activities would be prohibited within the ACEC.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Geophysical activities and related detonation activities would be prohibited within the ACEC.
Rights-of-Way: The ACEC would be managed as a ROW avoidance area.	Same as No Action Alternative	The ACEC would be managed as a ROW exclusion area.	Same as Alternative 2	Same as Alternative 2: *The ACEC would be managed as a ROW exclusion area.*
OHV Use: The ACEC would be closed to OHV use.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be closed to OHV use.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Recreation: No similar action	No similar action	Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Oregon Buttes.	Same as Alternative 2	Same as Alternative 2: Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Oregon Buttes.
A recreation project plan and interpretive prospectus would be developed, as necessary, for Oregon Buttes.	Same as No Action Alternative	A recreation project plan and interpretive prospectus would be prepared and implemented for Oregon Buttes.	Same as Alternative 2	Same as Alternative 2: A recreation project plan and interpretive prospectus would be prepared and implemented for Oregon Buttes.
Leasable Fluid Minerals: The ACEC would be closed to consideration of fluid minerals leasing.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be closed to consideration of fluid minerals leasing.
Leasable Solid Minerals: The ACEC would be closed to leasable solid minerals exploration and leasing.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be closed to leasable solid minerals exploration and leasing.
Salable Minerals: The ACEC would be closed to mineral material sales.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be closed to mineral material sales.
Locatable Minerals: A plan of operations would be required for all activities greater than casual use.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: A plan of operations would be required for all activities greater than casual use.
No similar action	No similar action	Withdrawal from mineral location would be pursued in the entire planning area.	No similar action	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
VRM: The ACEC would be managed as a VRM Class I area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be managed as a VRM Class I area.
South Pass Historic Landscape ACEC				
Rights-of-Way: South Pass Historic Landscape ACEC (visible portion) would be managed as a ROW exclusion area.	The entire ACEC would be managed as a ROW avoidance area.	Same as No Action Alternative	Same as No Action Alternative	South Pass Historic Landscape ACEC (visible portion) would be managed as a ROW exclusion area *for any ROW action that would adversely affect the viewshed (such as major transmission facilities or high-profile facilities)*.
South Pass Historic Landscape ACEC (non-visible portion) would be managed as a ROW avoidance area.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: South Pass Historic Landscape ACEC (non-visible portion) would be managed as a ROW avoidance area.
OHV Use: OHV use within South Pass Historic Landscape ACEC (visible portion) would be limited to designated roads and trails.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	*OHV use within the entire ACEC would be limited to designated roads and trails.*
OHV use within South Pass Historic Landscape ACEC (non-visible portion) would be limited to existing roads and trails.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Fluid Minerals: South Pass Historic Landscape ACEC (visible portion) would be open to consideration of fluid minerals leasing with no surface occupancy requirements.	No similar action	The entire ACEC would be closed to fluid minerals leasing	Same as No Action Alternative	Portions of the South Pass Historic Landscape ACEC (visible portion) would be open to consideration of fluid minerals leasing with no surface occupancy requirements.
Portions of South Pass Historic Landscape ACEC (non-visible portion) would be open to consideration of fluid minerals leasing with controlled surface use requirements (Map 10).	No similar action	No similar action	South Pass Historic Landscape ACEC (non-visible portion) would be open to consideration of fluid minerals leasing with stipulations to protect other resources (Map 42). Stipulations could include, but would not be limited to, no surface occupancy requirements, controlled surface use, and timing of development activity.	*Portions of the South Pass Historic Landscape ACEC (non-visible portion) would be open to fluid minerals leasing consideration with stipulations to protect other resources (Map 54). Stipulations could include, but would not be limited to, no surface occupancy requirements, controlled surfaced use, and timing of development activity.*
No similar action	No similar action	No similar action	No similar action	*A portion of the South Pass Historic Landscape ACEC would be closed to fluid minerals leasing (Map 54).*
No similar action	No similar action	No similar action	No similar action	*As leases expire in the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis with lease stipulations to protect sensitive resources. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Solid Minerals: South Pass Historic Landscape ACEC (visible portion) would be closed to leasable solid minerals exploration and leasing.	The entire ACEC would be open to leasable solid minerals exploration and leasing with avoidance and ROW limitations, as needed.	The entire ACEC would be closed to leasable solid minerals exploration and leasing.	Same as No Action Alternative	Same as No Action Alternative: South Pass Historic Landscape ACEC (visible portion) would be closed to leasable solid minerals exploration and leasing.
Salable Minerals: South Pass Historic Landscape ACEC (visible portion) would be closed to mineral material sales.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: South Pass Historic Landscape ACEC (visible portion) would be closed to mineral material sales.
Locatable Minerals: No similar action	No similar action	Withdrawal from mineral location would be pursued for the entire ACEC.	No similar action	No similar action
Withdrawal from mineral location would be pursued on South Pass Summit.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: Withdrawal from mineral location would be pursued on South Pass Summit.
No similar action	No similar action	No similar action	Withdrawal from mineral location would be pursued for the northern elk calving areas in part of the South Pass historic Landscape ACEC.	Same as Alternative 3: *Withdrawal from mineral location would be pursued for the northern elk calving areas in part of the South Pass historic Landscape ACEC.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
VRM: The entire ACEC would be managed as a VRM Class II area.	Same as No Action Alternative	Managed as a VRM Class I area.	Same as No Action Alternative	Same as No Action Alternative: The entire ACEC would be managed as a VRM Class II area.
The South Pass Historic Landscape ACEC viewshed would be maintained from approximately 3 miles of the Oregon, Mormon, California, and Pony Express Trail routes.	The South Pass Historic Landscape viewshed would be reduced to approximately 1 mile in each direction from the center of the Oregon, Mormon Pioneer, California, and Pony Express Trail routes.	The South Pass Historic Landscape viewshed would be expanded to approximately five miles of the Oregon, Mormon, California and Pony Express trail routes.	Same as No Action Alternative	Same as No Action Alternative: The South Pass Historic Landscape ACEC viewshed would be maintained from approximately three miles of the Oregon, Mormon, California and Pony Express trail routes.
Intrusions within the viewshed area could be allowed, provided the results of a visual analysis indicated they were not visible from the trail routes or that they could be mitigated.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Intrusions within the viewshed area could be allowed, provided the results of a visual analysis indicated they were not visible from the trail routes or that they could be mitigated.
White Mountain Petroglyphs ACEC				
Rights-of-Way: The ACEC would be managed as a ROW exclusion area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be managed as a ROW exclusion area.
OHV Use: The ACEC would be closed to OHV use outside of identified access and parking areas.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be closed to OHV use outside of identified access and designated parking areas.
Recreation: A recreation project plan and interpretive prospectus would be developed, as necessary.	Same as No Action Alternative	A recreation plan and interpretive prospectus would be prepared and implemented.	Same as Alternative 2	Same as Alternative 2: A recreation project plan and interpretive prospectus would be prepared and implemented.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Fluid Minerals: The ACEC would be open to consideration of fluid minerals leasing with no surface occupancy requirements.	Same as No Action Alternative	The ACEC would be closed to fluid minerals leasing.	Same as No Action Alternative	*The ACEC would be closed to fluid mineral leasing consideration.* The area would be managed as an NSO area for other surface disturbing and disruptive activities.
Leasable Solid Minerals: White Mountain Petroglyphs Vista would be closed to coal and sodium exploration.	The ACEC would be open to coal and sodium exploration activities subject to avoidance and ROW limitations as needed.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: White Mountain Petroglyphs Vista would be closed to coal and sodium exploration.
Salable Minerals: The ACEC would be closed to mineral material sales.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be closed to mineral material sales.
Locatable Minerals: Withdrawal from mineral location would be pursued.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Withdrawal from mineral location would be pursued.
VRM: The ACEC would be managed as VRM Class II area.	Same as No Action Alternative	Would be managed as VRM Class I area.	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be managed as VRM Class II area.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Steamboat Mountain ACEC				
Steamboat Mountain ACEC designation and boundaries would remain unchanged (Map 14).	Steamboat Mountain ACEC designation would be removed.	Steamboat Mountain ACEC would be expanded to include the area of highest concentration and overlap of big game habitat features, natural systems, and cultural values. These include the largest portion of elk crucial winter range and birthing area overlap, a portion of the sand dunes stabilized by the basin big sagebrush/ lemon scurfpea plant community, and the Native American respected places of Indian Gap and portions of the Indian Gap Trail (Map 37).	Steamboat Mountain ACEC would be expanded to include all of Indian Gap and the face of Steamboat Mountain. This would include portions of the basin big sagebrush/lemon scurfpea vegetation community (Map 48).	*Steamboat Mountain ACEC would be expanded to include the highest concentration and overlap of unique habitat features, natural systems, and cultural values. These include a portion of the sand dunes stabilized by the basin big sagebrush/ lemon scurfpea plant community, and the Native American respected places of Indian Gap and portions of the Indian Gap Trail (Map 60).*
No similar action	No similar action	The basin big sagebrush/lemon scurfpea vegetation community would be further evaluated as an RNA and designated as though the criteria were met (Map 37).	No similar action	No similar action
Rights-of-Way: The ACEC would be managed as a ROW avoidance area.	No similar action	The ACEC would be managed as a ROW exclusion area.	The southern portion of the ACEC would be managed as a ROW exclusion area. The remainder of the ACEC would be managed as a ROW avoidance area.	Same as No Action Alternative: The ACEC would be managed as a ROW avoidance area.
Communication Sites: Communication sites would be prohibited in Steamboat Mountain ACEC.	Communication sites would be considered on Steamboat Mountain.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Communication sites would be prohibited in Steamboat Mountain ACEC.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
OHV Use: OHV use would be limited to designated roads and trails.	OHV use would be limited to existing roads and trails.	Same as Alternative 1	Same as No Action Alternative	Same as No Action Alternative: OHV use would be limited to designated roads and trails.
Recreation: Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for the Red Desert viewpoint from Dugway of Steamboat Mountain.	Same as No Action Alternative	Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Steamboat Mountain.	Same as Alternative 2	Same as Alternative 2: Location of interpretive and directional signs along backcountry byways would be coordinated with state and local governments and other interested parties for Steamboat Mountain.
A recreation project plan and interpretive prospectus would be developed, as necessary, for Steamboat Mountain.	Same as No Action Alternative	A recreation plan and interpretive prospectus would be prepared and implemented for Steamboat Mountain.	Same as Alternative 2	Same as Alternative 2: A recreation project plan and interpretive prospectus would be prepared and implemented for Steamboat Mountain.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Fluid Minerals: No similar action	No similar action	The ACEC would be closed to fluid minerals leasing consideration.	Steamboat Mountain ACEC would be open to consideration of fluid minerals leasing consideration with stipulations to protect other resources (Map 42). Stipulations could include, but would not be limited to, no surface occupancy requirements, controlled surface use, and timing of development activity.	*Most of the ACEC would be closed to fluid minerals leasing consideration (Map 54). The remainder of the ACEC would be open to consideration of fluid minerals leasing consideration with stipulations to protect other resources. Stipulations could include, but would not be limited to, no surface occupancy requirements, controlled surface use, and timing of development activity.*
No similar action	No similar action	No similar action	No similar action	*As leases expire in the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Solid Minerals: The portions of Steamboat Mountain ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities (Map 6).	Same as No Action Alternative	The entire ACEC would be closed to solid leasable solid minerals exploration and leasing.	Same as Alternative 2	Same as No Action Alternative: The portions of Steamboat Mountain ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities (Map 57).
Those portions outside the coal development potential area would be closed to leasable solid minerals exploration and leasing (Map 6 and Map 11).	Same as No Action Alternative	No similar action	No similar action	Same as No Action Alternative: Those portions outside the coal development potential area would be closed to leasable solid minerals exploration and leasing (Map 55 and Map 57).
Salable Minerals: The entire ACEC would be closed to mineral material sales.	No similar action	Same as no Action Alternative	The lava portion of the ACEC would be closed to mineral material sales.	Same as Alternative 3: *The lava portion of the ACEC would be closed to mineral material sales.*
No similar action	No similar action	No similar action	The remainder of the ACEC would be open only when required to meet other planning objectives within the JMH CAP planning area.	Same as Alternative 3: *The remainder of the ACEC would be open only when required to meet other planning objectives within the JMH CAP planning area.*
Locatable Minerals: No similar action	No similar action	Withdrawal from mineral location would be pursued in the entire ACEC.	Withdrawal from mineral location would be pursued in the potential diamond development area of Steamboat Mountain ACEC.	Same as Alternative 3: *Withdrawal from mineral location would be pursued in the potential diamond development area of Steamboat Mountain ACEC.*
VRM: The southern portion of the ACEC would be managed as a VRM Class II area. The northern portion would be managed as a VRM class III area.	The entire ACEC would be managed as a VRM class IV area.	The entire ACEC would be managed as a VRM Class I area.	The entire ACEC would be managed as a VRM class II area.	Same as Alternative 3: *The entire ACEC would be managed as a VRM Class II area.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Greater Sand Dunes ACEC				
The Greater Sand Dunes ACEC designation and boundaries would remain unchanged (Map 14).	Same as No Action Alternative	The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area (Map 37).	Same as Alternative 2	Same as No Action Alternative: The Greater Sand Dunes ACEC designation and boundaries would remain unchanged (Map 14).
No similar action	No similar action	The expansion area would be managed as an RNA.	No similar action	No similar action
No similar action	No similar action	The portion of the ACEC within the WSA containing the dunal ponds (flockets) would be further evaluated as an RNA and designated as such if the criteria are met (Map 37).	No similar action	No similar action
Rights-of-Way: The ACEC would be managed as a ROW avoidance area (within 1 mile or the visual horizon, whichever is closer).	Same as No Action Alternative	Same as No Action Alternative	The ACEC would be managed as a ROW avoidance area.	Same as No Action Alternative: The ACEC would be managed as a ROW avoidance area (within 1 mile or the visual horizon, whichever is closer).
No similar action	No similar action	The expansion area of ACEC (paleosol deposition area) would be managed as a ROW exclusion area.	No similar action	No similar action
OHV Use: The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to existing roads and trails.	Same as No Action Alternative	The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to designated roads and trails.	Same as No Action Alternative	Same as No Action Alternative: The portion of the ACEC containing the Greater Sand Dunes Recreation Area would be open to OHV use. The remainder of the ACEC would be limited to existing roads and trails.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Recreation: A recreation site plan would be prepared for expansion of the parking area and camping facilities at the Greater Sand Dunes Recreation Area. The plan would address public health and safety, resolving user conflicts, and protecting adjoining resources.	No similar action	No similar action	No similar action	Same as No Action Alternative: A recreation site plan would be prepared for expansion of the parking area and camping facilities at the Greater Sand Dunes Recreation Area. The plan would address public health and safety, resolving user conflicts, and protecting adjoining resources.
Leasable Fluid Minerals: No similar action	No similar action	The ACEC would be closed to fluid mineral leasing.	The portion of the ACEC outside the WSA would be open to fluid minerals leasing consideration with stipulations to protect other resources (Map 42). Stipulations could include, but would not be limited to, no surface occupancy requirements, controlled surface use, and timing of development activity.	Same as Alternative 3: *A portion of the ACEC outside the WSA would be open to fluid minerals leasing consideration with stipulations to protect other resources (Map 54). Stipulations could include, but would not be limited to, no surface occupancy requirements, controlled surface use, and timing of development activity.*
No similar action	No similar action	No similar action	Other portions of the ACEC would be closed to fluid mineral leasing (Map 42).	Same as Alternative 3: *Other portions of the ACEC would be closed to fluid mineral leasing (Map 54).*
No similar action	No similar action	No similar action	No similar action	*As leases expire in the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Solid Minerals: The western portion of the ACEC would be closed to leasable solid minerals exploration and leasing.	Same as No Action Alternative	The entire ACEC would be closed to leasable solid minerals exploration and leasing.	Same as No Action Alternative	Same as No Action Alternative: The western portion of the ACEC would be closed to leasable solid minerals exploration and leasing.
The eastern portion of the ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities.	Same as No Action Alternative	No similar action	Same as No Action Alternative	Same as No Action Alternative: The eastern portion of the ACEC within the coal development potential area would be open to leasable solid minerals exploration and leasing using only subsurface mining methods and controls on surface facilities.
Salable Minerals: The ACEC would be closed to mineral material sales.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be closed to mineral material sales.
Locatable Minerals: Withdrawals from mineral location would be pursued in the western portion of the ACEC.	Same as No Action Alternative	Withdrawals from mineral location would be pursued in the entire ACEC.	Same as No Action Alternative	Same as No Action Alternative: Withdrawals from mineral location would be pursued in the western portion of the ACEC.
VRM: The ACEC would be managed as a VRM Class II area.	Same as No Action Alternative	The ACEC would be managed as a VRM Class I area.	Same as No Action Alternative	Same as No Action Alternative: The ACEC would be managed as a VRM Class II area.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Status Plants ACEC				
The Special Status Plant Species ACEC (identified in the Green River RMP) could be expanded into the JMH CAP planning area on a case-by-case basis.	The Special Status Plant Species ACEC would not be expanded into the JMH CAP planning area.	The Special Status Plant Species ACEC would be expanded into the JMH CAP planning area where such species are located (Map 37).	Same as Alternative 2	Same as No Action Alternative: The Special Status Plant Species ACEC (identified in the Green River RMP) could be expanded into the JMH CAP planning area on a case-by-case basis.
No similar action	No similar action	The Special Status Plant Species ACEC would be expanded into the JMH CAP area where potential habitat for such species is located (Map 37).	No similar action	No similar action
Disruptive Activities: Potential habitat of special status plant species' communities on federal lands or on split estate lands would require searches for the plant species prior to approving any project or activity. Should species be found, all disruptive activities would be halted until species-specific, protective measures were developed and implemented. For listed species, protective measures would be developed and implemented in coordination with the USFWS.	Same as no Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Potential habitat of special status plant species' communities on federal land or on split estate lands would require searches for the plant species prior to approving any project or activity. Should species be found, all disruptive activities would be halted until species-specific, protective measures were developed and implemented. For listed species, protective measures would be developed and implemented in coordination with the USFWS.
Rights-of-Way: Areas where special status plants occur would be managed as ROW avoidance areas.	Same as No Action Alternative	The ACEC would be managed as a ROW exclusion area.	The ACEC would be managed as a ROW exclusion area.	Same as No Action Alternative: Areas where special status plants occur would be managed as ROW avoidance areas.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
OHV Use: Areas where special status plants occur would be closed to OHV use.	Same as no Action Alternative	The ACEC would be closed to OHV use.	Same as Alternative 2: The ACEC would be closed to OHV use.	Same as no Action Alternative: Areas where special status plants occur would be closed to OHV use.
Leasable Fluid Minerals: Known locations of special status plant species would be open to consideration for mineral leasing with no surface occupancy requirements.	Known locations of special status plant species would be open to consideration for mineral leasing with controlled surface use requirements.	The ACEC would be closed to all mineral leasing.	The ACEC would be open to consideration for mineral leasing with no surface occupancy requirements.	Known locations of special status plant species would be open to consideration for mineral leasing with no surface occupancy requirements, *unless they occur in the area identified as closed to fluid mineral leasing (Map 54).*
Leasable Solid Minerals: Areas where special status plants occur would be closed to coal and sodium exploration as identified in the Green River RMP.	Areas where special status plants occur would be open to coal and sodium exploration subject to avoidance and ROW limitations as needed.	The ACEC would be closed to coal and sodium exploration.	Same as Alternative 2: The ACEC would be closed to coal and sodium exploration.	Same as No Action Alternative: Areas where special status plants occur would be closed to coal and sodium exploration as identified in the Green River RMP.
Salable Minerals: Areas where special status plants occur would be closed to mineral material sales.	Same as no Action Alternative	The ACEC would be closed to mineral material sales.	Same as Alternative 2: The ACEC would be closed to mineral material sales.	Same as no Action Alternative: Areas where special status plants occur would be closed to mineral material sales.
Locatable Minerals: Withdrawals from mineral location would be pursued where special status plants occur.	Same as no Action Alternative	Same as no Action Alternative	Same as no Action Alternative	Same as no Action Alternative: Withdrawals from mineral location would be pursued where special status plants occur.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Rangeland Management: Salt or mineral supplements would not be allowed in areas where special status plant species occur.	Same as No Action Alternative	Salt or mineral supplements would not be allowed within ½ mile of areas where special status plant species occur.	Salt or mineral supplements would not be allowed within ¼ mile of areas where special status plant species occur.	Same as No Action Alternative: No salt or mineral supplements would be allowed in areas where special status plant species occur.
Vegetation treatments would be designed to protect and conform to special status plant species.	No similar action	Same as No Action Alternative	Same as No Action Alternative	Vegetation treatments would be designed to conform to requirements to protect or enhance special status plant species.
Herbicide loading sites would be prohibited within 500 feet of special status plant locations and would be used in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Herbicide loading sites would be prohibited within 500 feet of special status plant locations and would be used in accordance with the guidelines in Appendix 8, Standard Operating Procedures for Range Improvements and Vegetation Manipulations.
Fire Management: Fire suppression vehicular activities would be limited to existing roads and trails in special status plant species habitat.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Fire suppression vehicular activities would be limited to existing roads and trails in special status plant species habitat.
A site-specific analysis would be prepared for all fire management activities around special status plant species sites to determine the appropriate fire management response.				A site-specific analysis would be prepared for all fire management activities around special status plant species sites to determine the appropriate fire management response.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Cushion Plant Community ACEC				
No similar action	No similar action	Cushion plant communities would be designated an ACEC (Map 37).	Same as Alternative 2	No similar action
No similar action	No similar action	The Cushion Plant Community ACEC would be further evaluated for designation as an RNA and designated as such if the criteria were met.	No similar action	No similar action
Rights-of-Way: No similar action	No similar action	The ACEC would be managed as an exclusion area for ROWs or other surface disturbing activities.	The ACEC would be managed as an avoidance area for ROWs or other surface disturbing activities.	No similar action
Leasable Solid Minerals: No similar action	No similar action	The ACEC would be closed to leasable solid minerals exploration and leasing.	The ACEC would be closed to leasable solid minerals exploration.	No similar action
Salable Minerals: No similar action	No similar action	The ACEC would be closed to mineral material sales.	No similar action	No similar action
Locatable Minerals: No similar action	No similar action	Withdrawals from mineral location would be pursued.	No similar action	No similar action
West Sand Dunes Archeological District				
No similar action	No similar action	No similar action	No similar action	*The paleosol deposition area would be designated a separate special management area called the West Sand Dunes Archaeological District to be managed for scientific study, education, and interpretation.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Rights-of-Way: No similar action	No similar action	No similar action	No similar action	*The area would be managed as a ROW avoidance area.*
Leasable Fluid Minerals: No similar action	No similar action	No similar action	No similar action	Most of the area would be open to consideration for fluid minerals leasing with requirements to protect sensitive resources. *Approximately 6,660 acres would be closed to fluid mineral leasing (Map 54). A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.*
VRM: No similar action	No similar action	No similar action	No similar action	*The area would be managed as a VRM Class II area.*
		Pinnacles Geologic Feature		
The Pinnacles Geologic Feature would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.	Same as No Action Alternative	The Pinnacles Geologic Feature would be designated an ACEC.	Same as No Action Alternative	Same as No Action Alternative: The Pinnacles Geologic Feature would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.
Rights-of-Way: No similar action	No similar action	The area would be managed as a ROW exclusion area.	Same as Alternative 2	Same as Alternative 2: *The area would be managed as a ROW exclusion area.*
Geophysical Activities: No similar action	No similar action	No similar action	No similar action	*Geophysical exploration vehicles and detonation activities would be prohibited within ½ mile of the Pinnacles Geologic Feature.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
OHV Use: OHV use would be limited to existing roads and trails.	OHV use would be limited to designated roads and trails.	The area would be closed to OHV use.	Same as Alternative 2	Same as Alternative 2: *The area would be closed to OHV use.*
Leasable Fluid Minerals: No similar action	No similar action	The area would be closed to fluid minerals leasing.	Same as Alternative 2	Same as Alternative 2: *The area would be closed to fluid minerals leasing consideration (Map 54).*
Leasable Solid Minerals: No similar action	No similar action	The area would be closed to leasable solid minerals exploration.	Same as Alternative 2	No similar action
Salable Minerals: No similar action	No similar action	The area would be closed to mineral material sales.	Same as Alternative 2	Same as Alternative 2: *The area would be closed to mineral material sales.*
Locatable Minerals: No similar action	No similar action	Withdrawals from mineral location would be pursued.	No similar action	Same as Alternative 2: *Withdrawals from mineral location would be pursued.*
VRM: The area would be managed as a VRM Class III area.	The area would be managed as a VRM Class IV area.	The area would be managed as a VRM Class I area.	Same as Alternative 2	*The area would be managed as a VRM Class II area.*
Pinnacles Geographic Area				
The Pinnacles Geographic Area would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.	Same as No Action Alternative	No similar action	No similar action	Same as No Action Alternative: The Pinnacles Geographic Area would continue to be managed as part of the Red Desert Watershed Management Area, as provided in the Green River RMP.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Rights-of-Way: No similar action	No similar action	The area would be managed as a ROW exclusion area.	Same as Alternative 2	No similar action
OHV Use: No similar action	No similar action	The area would be closed to OHV use.	Same as Alternative 2	No similar action
Leasable Fluid Minerals: No similar action	No similar action	The area would be closed to fluid minerals leasing.	Same as Alternative 2	Same as Alternative 2: *The area would be closed to fluid minerals leasing (Map 54). A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.*
Leasable Solid Minerals: No similar action	No similar action	The area would be closed to leasable solid minerals exploration and leasing.	The area would be closed to leasable solid minerals exploration.	No similar action
Salable Minerals: No similar action	No similar action	The area would be closed to mineral material sales.	Same as Alternative 2	No similar action
Locatable Minerals: No similar action	No similar action	Withdrawals from mineral location would be pursued.	No similar action	No similar action
VRM: No similar action	No similar action	The area would be managed as a VRM Class I.	Same as Alternative 2	No similar action

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Steamboat Mountain Management Area				
No similar action	No similar action	No similar action	No similar action	The Steamboat Mountain Management Area would be a geographic area which would include the Steamboat Mountain ACEC, the Steamboat Mountain ACEC proposed expansion, and additional area containing other important Native American cultural values, important watershed values, unique wildlife habitat features, and crucial and overlapping big game habitat.
Rights-of-Way: No similar action	No similar action	No similar action	No similar action	*The Steamboat Mountain Management Area would be managed as a ROW avoidance area.*
OHV Use: No similar action	No similar action	No similar action	No similar action	*OHV use would be limited to designated roads and trails.*
Leasable Fluid Minerals: No similar action	No similar action	No similar action	No similar action	*Approximately 77,000 acres would be closed to fluid minerals leasing (Map 54). The remainder of the area would be open to consideration of fluid minerals leasing with mitigation to protect sensitive resources.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
				As leases expire in portions of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis with lease stipulations to protect sensitive resource. *As leases expire in other portions (Area 2 in Appendix 17) of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.* *The remainder of the area would be closed to consideration of new leasing.*

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Leasable Solid Minerals: No similar action	No similar action	No similar action	No similar action	*The Steamboat Mountain Management Area (outside area with coal recommendation) would be closed to leasable solid minerals exploration.* *The Steamboat Mountain Management Area would be open to solid minerals leasing for subsurface mining with controls on surface activities and facilities.*
Salable Minerals: No similar action	No similar action	No similar action	No similar action	*The Steamboat Mountain Management Area would be closed to mineral material sales.*
VRM: No similar action	No similar action	No similar action	No similar action	*The Steamboat Mountain Management Area would be managed as a VRM Class II area.*
Red Desert Watershed Management Area				
OHV Use: OHV use would be limited to designated roads and trails.	No similar action	No similar action	Same as No Action Alternative	Same as No Action Alternative: OHV use would be limited to designated roads and trails.
Leasable Fluid Minerals: No similar action	No similar action	The area would be closed to fluid minerals leasing.	No similar action	Approximately 42,250 acres would be closed to fluid minerals leasing (Map 54). The remainder of the area would be open to consideration of fluid mineral leasing with mitigation to protect sensitive resources.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
				As leases expire in portions of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis with lease stipulations to protect sensitive resource. As leases expire in other portions (Area 2 in Appendix 17) of the area open to leasing consideration, they would be considered for subsequent lease offerings on a case-by-case basis based upon such factors as operational need, resource recovery, geology, and ability to mitigate impacts. Leases that expire in the area identified as closed to fluid mineral leasing would not be considered for subsequent lease offerings. A portion along the perimeter of the area identified as closed to future oil and gas leasing (Figure A17-2, Appendix 17) would be considered for leasing with an NSO stipulation.
VRM: The area would be managed as a VRM Class III area.	No similar action	The area would be managed as a VRM Class I area.	The area would be managed as a VRM Class II area.	Same as No Action Alternative: The area would be managed as a VRM Class III area.

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential (Approximate Acres)[1]

Area	Hydrocarbon Potential			Total
	High	Moderate	Low	
GENERAL PLANNING AREA				
NO ACTION ALTERNATIVE:				
NO LEASE[2]				
Core area	82,700	0	0	82,700
Total Affected Area (in acres)	**82,700**	**0**	**0**	**82,700**
NO SURFACE OCCUPANCY[4]				
Boars Tusk	30	0	0	30
White Mountain Petroglyphs vista	0	510	0	510
Greater Sand Dunes ACEC (developed recreation sites and OHV parking lot	50	0	0	50
Tri-Territory Marker	10	0	0	10
Indian Gap + 100-foot buffer	750	0	0	750
Crookston Ranch + 100-foot buffer	60	0	0	60
South Pass Historic Landscape ACEC (visible portion)	270	5,610	16,060	21,940
Raptor nest sites (active)	140	240	10	390
Special status plants[5]	2,760	0	110	2,870
Total Affected Area (in acres)[6]	**2,830**	**5,610**	**16,140**	**24,580**
CONTROLLED SURFACE USE[4]				
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer	49,670	27,230	8,550	85,450
National Historic Trails + ¼-mile buffer	130	2,130	7,370	9,630
Expansion Era Roads + ¼-mile buffer	4,000	1,550	1,360	6,910
Slopes > 25 percent	15,390	2,850	1,590	19,830
South Pass Historic Landscape ACEC (portion not visible)	2,860	6,970	16,490	26,320
VRM Class II lands	49,310	44,230	70,360	163,900
Special status plants potential habitat[8]	0	0	1,150	1,150
Greater sage-grouse leks + ¼-mile buffer[7]	820	2,080	720	3,620
Total Affected Area (in acres)[6]	**56,970**	**62,490**	**54,220**	**173,680**
SEASONAL LIMITATIONS[4]				
Elk crucial habitat	117,810	7,660	0	125,470
Deer crucial habitat	39,280	0	0	39,280
Antelope crucial habitat	12,950	41,030	0	53,980
Elk birthing areas	71,370	8,440	4,690	84,500
Deer birthing areas	24,590	320	3,930	28,840
Raptor nest sites + ½- to 1-mile buffer	9,780	15,590	1,290	26,660
Greater sage-grouse leks + ¼-mile buffer[7]	820	2,080	720	3,620
Greater sage-grouse nesting area + 2-mile buffer[7]	38,600	62,870	26,260	127,730
Greater sage-grouse winter concentration areas[7]	410	0	0	410
Total Affected Area (in acres)[6]	**170,640**	**90,410**	**32,490**	**293,540**
ALTERNATIVE 1:				
NO LEASE[2]				
Total Affected Area (in acres)	**0**	**0**	**0**	**0**
NO SURFACE OCCUPANCY[4]				
Indian Gap + 100-foot buffer	750	0	0	750
Boars Tusk	30	0	0	30
Tri-Territory Marker	10	0	0	10
Crookston Ranch + 100-foot buffer	60	0	0	60
Total Affected Area (in acres)	**820**	**0**	**0**	**820**

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential (Approximate Acres)[1] (Continued)

Area	Hydrocarbon Potential			Total
	High	Moderate	Low	
CONTROLLED SURFACE USE[4]				
Wetlands, riparian areas, and 100-year floodplains + 250-foot buffer	25,550	14,050	4,310	43,910
Expansion Era Roads + ¼-mile buffer	4,000	1,550	1,360	6,910
Slopes > 25 percent	15,390	2,850	1,590	19,830
South Pass Historic Landscape viewshed (1-mile buffer)	450	7,010	21,000	28,460
Greater sage-grouse leks + ¼-mile buffer[7]	820	2,080	720	3,620
Special status plants[5]	2,760	0	110	2,870
Special status plants potential habitat[8]	0	0	1,150	1,150
Total Affected Area (in acres)[6]	**46,330**	**25,790**	**26,260**	**98,380**
SEASONAL LIMITATIONS[4]				
Greater sage-grouse potential nesting habitat[7,9]	8,170	14,720	6,330	29,220
Raptor nest sites + ¼-mile buffer	1,490	1,990	130	3,610
Mountain plover aggregation areas[7]	120	0	0	120
Total Affected Area (in acres)[6]	**9,610**	**16,640**	**6,460**	**32,710**
ALTERNATIVE 2:				
NO LEASE[2]				
Pinnacles Geographic Area	8,950	0	0	8,950
ACECs + expansions	113,880	31,290	33,750	178,920
Red Desert Watershed Management Area	71,040	24,940	8,530	104,510
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer	49,670	27,230	8,550	85,450
National Historic Trails + ¼-mile buffer	130	2,130	7,370	9,630
Expansion Era Roads + ¼-mile buffer	4,000	1,550	1,360	6,910
Tri-Territory Marker	10	0	0	10
Slopes > 20 percent	36,920	9,370	8,680	54,970
Greater sage-grouse concentration areas[7]	50,110	65,420	31,220	146,750
Greater sage-grouse winter range[7,10]	57,740	9,460	0	67,200
Raptor nest sites + ½- to 1-mile buffer	9,780	15,590	1,290	26,660
Mountain plover aggregation areas[7]	120	0	0	120
Elk crucial habitat	117,810	7,660	0	125,470
Deer crucial habitat	39,280	0	0	39,280
Antelope crucial habitat	12,950	41,030	0	53,980
Elk birthing areas	71,370	8,440	4,690	84,500
Deer birthing areas	24,590	320	3,930	28,840
Connectivity area	161,040	47,350	21,960	230,350
Total Affected Area (in acres)[6]	**239,380**	**127,710**	**53,390**	**420,480**
NO SURFACE OCCUPANCY[3,4]				
White Mountain Petroglyphs vista	0	510	0	510
South Pass Historic Landscape (visible portion)	230	8,040	27,770	36,040
Boars Tusk	30	0	0	30
Indian Gap + 100-foot buffer	750	0	0	750
Tri-Territory Marker	10	0	0	10
Crookston Ranch + 300-foot buffer	90	0	0	90
Total Affected Area (in acres)[6]	**1,700**	**370**	**2,580**	**4,650**

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential (Approximate Acres)[1] (Continued)

Area	Hydrocarbon Potential			Total
	High	Moderate	Low	
CONTROLLED SURFACE USE[3,4]				
Wetlands, riparian areas, and 100-year floodplains + ¼-mile buffer	121,890	66,700	23,130	211,720
Total Affected Area (in acres)[6]	**3,400**	**3,240**	**1,700**	**8,340**
SEASONAL LIMITATIONS[3,4]				
Elk crucial habitat	117,810	7,660	0	125,470
Deer crucial habitat	39,280	0	0	39,280
Antelope crucial habitat	12,950	41,030	0	53,980
Mountain plover aggregation areas + ¼-mile buffer[7]	1,340	0	0	1,340
Total Affected Area (in acres)	**141,980**	**48,160**	**0**	**190,140**
ALTERNATIVE 3:				
NO LEASE[2]				
Pinnacles Geographic Area	8,950	0	0	8,950
Total Affected Area (in acres)	**8,950**	**0**	**0**	**8,950**
NO SURFACE OCCUPANCY[3,4]				
Boars Tusk	30	0	0	30
White Mountain Petroglyphs vista	0	510	0	510
Crookston Ranch + 100-foot buffer	60	0	0	60
Indian Gap + 100-foot buffer	750	0	0	750
Tri-Territory Marker	10	0	0	10
Special Status Plants ACEC[5]	2,760	0	110	2,870
Raptor nest sites (active)	140	240	10	390
Greater sage-grouse leks + ½-mile buffer[7]	2,970	7,230	2,480	12,680
Total Affected Area (in acres)[6]	**6,550**	**7,740**	**2,590**	**16,880**
CONTROLLED SURFACE USE[3,4]				
Wetlands, riparian areas, and 100-year floodplains + ¼-mile buffer	121,900	66,670	23,150	211,720
Special status plants potential habitat[8]	0	0	1,150	1,150
Slopes > 20 percent	36,920	9,370	8,680	54,970
Remaining ACECs + expansions	67,710	30,060	32,560	130,330
National Historic Trails + ¼-mile buffer	130	2,130	7,370	9,630
Expansion Era Roads + ¼-mile buffer	4,000	1,550	1,360	6,910
Total Affected Area (in acres)[6]	**156,600**	**71,470**	**44,820**	**272,890**
SEASONAL LIMITATIONS[3,4]				
Elk crucial habitat	117,810	7,660	0	125,470
Deer crucial habitat	39,280	0	0	39,280
Antelope crucial habitat	12,950	41,030	0	53,980
Elk birthing areas	71,370	8,440	4,690	84,500
Deer birthing areas	24,590	320	3,930	28,840
Raptor nest sites + ½- to 1-mile buffer	9,780	15,590	1,290	26,660
Mountain plover aggregation areas + ¼-mile buffer[7]	1,340	0	0	1,340
Greater sage-grouse leks + ¼-mile buffer	820	2,080	720	3,620
Greater sage-grouse potential nesting habitat[7,9]	29,040	40,470	20,240	89,750
Greater sage-grouse winter range[7,10]	57,740	9,460	0	67,200
Total Affected Area (in acres)[6]	**163,850**	**121,810**	**28,300**	**313,960**

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential (Approximate Acres)[1] (Continued)

Area	Hydrocarbon Potential			Total
	High	Moderate	Low	
PROPOSED JMH CAP:				
NO LEASE[2]				
Area 3 minus the NSO areas (Appendix 17)	125,270	34,500	18,490	178,260
Sensitive resources	14,200	7,350	7,020	28,570
Total Affected Area (in acres)[6]	**125,280**	**36,020**	**18,500**	**179,800**
NO SURFACE OCCUPANCY[3,4]				
Indian Gap + 100-foot buffer	750	0	0	750
Greater Sand Dunes ACEC (developed recreation sites and OHV parking lot)	50	0	0	50
Crookston Ranch + 100-foot buffer	60	0	0	60
South Pass Historic Landscape ACEC (visible portion)	270	5,610	16,060	21,940
Special status plants[5]	2,760	0	110	2,870
Raptor nest sites (active)	140	240	10	390
Sensitive resources	23,510	5,620	2,660	31,790
Area 3 NSO areas (Appendix 17)	17,000	14,530	4,520	36,050
Total Affected Area (in acres)[6]	**20,390**	**19,910**	**18,470**	**58,770**
CONTROLLED SURFACE USE[3,4]				
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer	49,670	27,230	8,550	85,450
National Historic Trails + ¼-mile buffer	130	2,130	7,370	9,630
Slopes > 20 percent	36,920	9,370	8,680	54,970
ACECs + expansions	66,380	12,640	32,560	111,580
Steamboat Mountain Management Area	88,300	0	0	88,300
Areas adjacent to WSAs	23,750	32,370	16,040	72,160
Portion of White Mountain	0	2,740	0	2,740
West Sand Dunes Archaeological District	0	18,710	0	18,710
Special status plants potential habitat[8]	0	0	1,150	1,150
Greater sage-grouse potential nesting habitat[7,9]	92,900	100,360	40,870	234,130
Greater sage-grouse winter range[7,10]	57,740	9,460	0	67,200
Sensitive resources	12,220	8,900	40	21,160
Total Affected Area (in acres)[6]	**108,080**	**83,580**	**23,970**	**215,630**
SEASONAL LIMITATIONS[3,4]				
Elk crucial habitat	117,810	7,660	0	125,470
Deer crucial habitat	39,280	0	0	39,280
Antelope crucial habitat	12,950	41,030	0	53,980
Elk birthing areas	71,370	8,440	4,690	84,500
Deer birthing areas	24,590	320	3,930	28,840
Raptor nest sites + ½- to 1-mile buffer	9,780	15,590	1,290	26,660
Greater sage-grouse leks + ¼-mile buffer	820	2,080	720	3,620
Greater sage-grouse potential nesting habitat[7,9]	92,840	100,090	40,870	233,800
Greater sage-grouse winter range[7,10]	57,740	9,460	0	67,200
Mountain plover aggregation areas + ¼-mile buffer[7]	1,340	0	0	1,340
Total Affected Area (in acres)[6]	**215,360**	**115,070**	**41,970**	**372,400**

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential (Approximate Acres)[1] (Continued)

Area	Hydrocarbon Potential			Total
	High	Moderate	Low	
CORE AREA				
NO ACTION ALTERNATIVE:				
NO LEASE[2]				
Core area	82,700	0	0	82,700
Total Affected Area (in acres)	**82,700**	**0**	**0**	**82,700**
NO SURFACE OCCUPANCY[4]				
Total Affected Area (in acres)[6]	**0**	**0**	**0**	**0**
CONTROLLED SURFACE USE[4]				
Total Affected Area (in acres)[6]	**0**	**0**	**0**	**0**
SEASONAL LIMITATIONS[4]				
Elk crucial habitat	69,580	0	0	69,580
Deer crucial habitat	21,630	0	0	21,630
Elk birthing areas	48,920	0	0	48,920
Deer birthing areas	24,570	0	0	24,570
Raptor nest sites + ½- to 1-mile buffer	2,330	0	0	2,330
Greater sage-grouse leks + ¼-mile buffer[7]	20	0	0	20
Greater sage-grouse nesting area + 2-mile buffer[7]	3,870	0	0	3,870
Greater sage-grouse winter concentrations areas[7]	30	0	0	30
Total Affected Area (in acres)[6]	**72,250**	**0**	**0**	**72,250**
ALTERNATIVE 1:				
NO LEASE[2]				
Total Affected Area (in acres)	**0**	**0**	**0**	**0**
NO SURFACE OCCUPANCY[4]				
Indian Gap + 100-foot buffer	750	0	0	750
Tri-Territory Marker	10	0	0	10
Total Affected Area (in acres)	**760**	**0**	**0**	**760**
CONTROLLED SURFACE USE[4]				
Wetlands, riparian areas, and 100-year floodplains + 250-foot buffer	8,170	0	0	8,170
Greater sage-grouse leks + ¼-mile buffer[7]	20	0	0	20
Slopes > 25 percent	9,760	0	0	9,760
Total Affected Area (in acres)[6]	**17,760**	**0**	**0**	**17,760**
SEASONAL LIMITATIONS[4]				
Greater sage-grouse potential nesting habitat[7,9]	240	0	0	240
Raptor nest sites + ¼-mile buffer	640	0	0	640
Mountain plover aggregation areas[7]	20	0	0	20
Total Affected Area (in acres)[6]	**900**	**0**	**0**	**900**

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential (Approximate Acres)[1] (Continued)

Area	Hydrocarbon Potential			Total
	High	Moderate	Low	
ALTERNATIVE 2:				
NO LEASE[2]				
ACECs + expansions	78,400	0	0	78,400
Red Desert Watershed Management Area	3,240	0	0	3,240
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer	15,530	0	0	15,530
Tri-Territory Marker	10	0	0	10
Greater sage-grouse concentration areas[7]	5,400	0	0	5,400
Greater sage-grouse winter range[7,10]	2,980	0	0	2,980
Raptor nest sites + ½- to 1-mile buffer	2,330	0	0	2,330
Mountain plover aggregation areas[7]	20	0	0	20
Elk crucial habitat	69,580	0	0	69,580
Deer crucial habitat	21,630	0	0	21,630
Elk birthing areas	48,920	0	0	48,920
Deer birthing areas	24,570	0	0	24,570
Connectivity area	82,670	0	0	82,670
Slopes > 20 percent	22,100	0	0	22,100
Total Affected Area (in acres)[6]	**82,700**	**0**	**0**	**82,700**
NO SURFACE OCCUPANCY[3,4]				
Total Affected Area (in acres)[6]	**0**	**0**	**0**	**0**
CONTROLLED SURFACE USE[3,4]				
Total Affected Area (in acres)[6]	**0**	**0**	**0**	**0**
SEASONAL LIMITATIONS[3,4]				
Elk crucial habitat	69,580	0	0	69,580
Deer crucial habitat	21,630	0	0	21,630
Mountain plover aggregation areas + ¼-mile buffer[7]	250	0	0	250
Total Affected Area (in acres)[6]	**72,150**	**0**	**0**	**72,150**
ALTERNATIVE 3:				
NO LEASE[2]				
Total Affected Area (in acres)	**0**	**0**	**0**	**0**
NO SURFACE OCCUPANCY[3,4]				
Crookston Ranch + 100 ft.	60	0	0	60
Indian Gap + 100 ft.	750	0	0	750
Tri-Territory Marker + 100 ft.	10	0	0	10
Greater sage-grouse leks + ½-mile buffer[7]	160	0	0	160
Raptor nest sites (active)	60	0	0	60
Total Affected Area (in acres)[6]	**1,030**	**0**	**0**	**1,030**
CONTROLLED SURFACE USE[3,4]				
Wetlands, riparian areas, and 100-yr floodplains + ¼-mile buffer	38,430	0	0	38,430
Slopes > 20%	22,100	0	0	22,100
ACECs + expansions	60,580	0	0	60,580
Total Affected Area (in acres)[6]	**70,110**	**0**	**0**	**70,110**

Table 2-2. Areas of Fluid Mineral Lease Conditional Requirements by Hydrocarbon Potential (Approximate Acres)[1] (Continued)

Area	Hydrocarbon Potential			Total
	High	Moderate	Low	
SEASONAL LIMITATIONS[3,4]				
Elk crucial habitat	69,580	0	0	69,580
Deer crucial habitat	21,630	0	0	21,630
Elk birthing areas	48,920	0	0	48,920
Deer birthing areas	24,570	0	0	24,570
Raptor nest sites + ½- to 1-mile buffer	2,330	0	0	2,330
Greater sage-grouse leks + ¼-mile buffer[7]	20	0	0	20
Greater sage-grouse potential nesting habitat[7,9]	940	0	0	940
Greater sage-grouse winter range[7,10]	2,980	0	0	2,980
Mountain plover aggregation areas + ¼-mile buffer[7]	250	0	0	250
Total Affected Area (in acres)[6]	**72,420**	**0**	**0**	**72,420**
PROPOSED JMH CAP:				
NO LEASE[2]				
Area 3 minus NSO areas (Appendix 17)	58,370	0	0	58,370
Sensitive resources	12,900	0	0	12,900
Total Affected Area (in acres)	**58,370**	**0**	**0**	**58,370**
NO SURFACE OCCUPANCY[3,4]				
Crookston Ranch + 100-foot buffer	60	0	0	60
Indian Gap + 100-foot buffer	750	0	0	750
Greater Sand Dunes ACEC (developed recreation sites and OHV parking lot)	50	0	0	50
Raptor nest sites (active)	60	0	0	60
Sensitive resources	13,320	0	0	13,320
Area 3 NSO areas (Appendix 17)	4,150	0	0	4,150
Total Affected Area (in acres)[6]	**5,940**	**0**	**0**	**5,940**
CONTROLLED SURFACE USE[3,4]				
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer	15,530	0	0	15,530
Slopes > 20 percent	22,100	0	0	22,100
ACECs + expansions	63,060	0	0	63,060
Areas adjacent to WSAs	5,540	0	0	5,540
Steamboat Mountain Management Area	63,780	0	0	63,780
Greater sage-grouse potential nesting habitat[7,9]	1,510	0	0	1,510
Greater sage-grouse winter range[7,10]	2,980	0	0	2,980
Sensitive resources	4,730	0	0	4,730
Total Affected Area (in acres)[6]	**18,500**	**0**	**0**	**18,500**
SEASONAL LIMITATIONS[3,4]				
Elk crucial habitat	69,580	0	0	69,580
Deer crucial habitat	21,630	0	0	21,630
Elk birthing areas	48,920	0	0	48,920
Deer birthing areas	24,570	0	0	24,570
Raptor nest sites + ½- to 1-mile buffer	2,330	0	0	2,330
Greater sage-grouse leks + ¼-mile buffer[7]	20	0	0	20
Greater sage-grouse potential nesting habitat[7,9]	1,510	0	0	1,510
Greater sage-grouse winter range[7,10]	2,980	0	0	2,980
Mountain plover aggregation areas + ¼-mile buffer[7]	250	0	0	250
Total Affected Area (in acres)[6]	**72,420**	**0**	**0**	**72,420**

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[1] Lease parcels are designed on aliquot parts. The actual acreage for the lease may vary.

[2] Although closed to leasing and related oil and gas activity, any other surface disturbing or disrupting use would follow the surface disturbance prescriptions (see Table 4-8).

[3] All activities would be subject to intensive mitigation based on site-specific analysis. These could include offsite placement of facilities; remote control monitoring; restricted or prohibited surface use, including road construction; multiple wells from a single pad; central tank batteries/facilities; pipelines and power lines concentrated in specific areas; etc.

[4] Refer to Appendix 5. These requirements apply to all surface disturbing activities.

[5] As new populations are identified, their locations will be added to this total.

[6] Acres may not add because of overlapping land resources and land use restrictions. Acres only reflect proposed fluid mineral lease stipulations.

[7] A lease stipulation is applied to all leases for protection of special status species and their habitats.

[8] Acres will change as floristic inventories identify actual areas with potential.

[9] Only 50 percent of area is expected to be suitable nesting habitat.

[10] Only sagebrush vegetation is expected to be suitable habitat.

Table 2-3. Wildlife Limitations by Alternative

Species/Habitat with Applicable Buffer	Limitation Time (month/day)	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
SEASONAL LIMITATIONS						
Greater sage-grouse leks (with ¼-mile buffer)	2/1–6/30	X				
Greater sage-grouse leks (with ¼-mile buffer)	3/1–5/15				X	X
Greater sage-grouse leks (with ¼-mile buffer)	Case-by-case basis		X			
Greater sage-grouse nesting area (with 2-mile buffer)	2/1–7/31	X				
Greater sage-grouse potential nesting habitat (up to 1 mile)	3/15–7/15		X			
Greater sage-grouse potential nesting habitat (up to 2 miles)	3/15–7/15				X	
Greater sage-grouse potential nesting habitat	3/15–7/15					X
Greater sage-grouse winter concentration areas	11/15–4/30	X				
Greater sage-grouse winter range	11/15–3/15				X	X
Mountain plover aggregation areas	4/10–7/10		X			
Mountain plover aggregation areas (with ¼-mile buffer)	4/10–7/10			X	X	X
Big game crucial habitat (winter range)	11/15–4/30	X		X	X	X
Big game birthing areas	5/1–6/30	X			X	X
Raptor nesting sites (with ½- to 1-mile buffer)	2/1–7/31	X			X	X
Raptor nesting sites (with ¼-mile buffer)	2/1–7/31		X			
Game and special status fish species	Spawning (species dependent)	X		X	X	X

Table 2-3. Wildlife Limitations by Alternative (Continued)

CONTROLLED SURFACE USE						
Greater sage-grouse leks (with ¼-mile buffer)	N/A	X	X			X
Greater sage-grouse potential nesting habitat	N/A					X
Raptor nesting sites (with ½- to 1-mile buffer)	N/A	X		X	X	X
NO SURFACE OCCUPANCY						
Greater sage-grouse nesting areas (with ½-mile buffer)	N/A				X	
Greater sage-grouse concentration areas	N/A			X		
Greater sage-grouse winter range	N/A			X		
Big game birthing areas	N/A			X		
Raptor nest sites (active)	N/A	X		X	X	X

Table 2-4. Summary of Impacts

SUMMARY OF IMPACTS TO LAND AND WATER RESOURCES

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
SUMMARY OF IMPACTS TO FIRE MANAGEMENT				
Fire Management Beneficial impacts from actions aimed at reducing fire frequency, size, and intensity.	Same as No Action Alternative	Same as No Action Alternative, except beneficial impacts would be slightly reduced because of actions requiring limited fire suppression activities (rather than full suppression).	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from actions aimed at reducing fire frequency, size, and intensity.
Watershed Resources Management No net impact	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No net impact
Wild Horse Management Beneficial and/or adverse impacts from the reduction (via browsing) of fine fuels.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated because of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except impacts could be greater because of the greater herd distribution resulting from expansion of the HMA.	Same as No Action Alternative: Beneficial and/or adverse impacts from the reduction (via browsing) of fine fuels.
Livestock Grazing Management Beneficial and/or adverse impacts from the reduction (via grazing) of fine fuels.	Same as No Action Alternative, except impacts would be greater because of anticipated increases in livestock grazing.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial and/or adverse impacts from the reduction (via grazing) of fine fuels.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Vegetation Management Beneficial impacts from maintaining diverse vegetation communities. Potential adverse impacts from prescribed burn stipulations, fire suppression restrictions, and allowance of the natural accumulation of fuels.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from maintaining diverse vegetation communities. Potential adverse impacts from prescribed burn stipulations, fire suppression restrictions, and allowance of the natural accumulation of fuels.
Wildlife Habitat Management Beneficial impacts from maintaining diverse vegetation communities. Potential adverse impacts from fire suppression restrictions and allowance of the natural accumulation of fuels.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from maintaining diverse vegetation communities. Potential adverse impacts from fire suppression restrictions and allowance of the natural accumulation of fuels.
Heritage Resources Management Adverse impacts from restrictions on fire suppression activities on or near heritage sites and from additional protection measures required for heritage resources during prescribed burns.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Adverse impacts from restrictions on fire suppression activities on or near heritage sites and from additional protection measures required for heritage resources during prescribed burns.
Recreation Management Adverse impacts from increased fire frequency caused by escaped campfires and OHV-ignited fires.	Same as No Action Alternative	Same as No Action Alternative, except impacts would be least intensive under this alternative because of camping restrictions and OHV use limitations.	Same as No Action Alternative, except impacts would be reduced because of camping restrictions and OHV use limitations	Same as No Action Alternative: Adverse impacts from increased fire frequency caused by escaped campfires and OHV-ignited fires.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Mineral Resources Management Adverse impacts from increased fire frequency caused by an increased number of ignition sources.	Same as No Action Alternative, except impacts would be greatest under this alternative because of increased potential for mineral development.	Same as No Action Alternative, except impacts would be least intensive under this alternative because of decreased potential for mineral development.	Same as No Action Alternative, except impacts would be slightly less because of an anticipated decrease in well development.	Adverse impacts from increased fire frequency caused by an increased number of ignition sources. Impacts would be similar to, but potentially greater in the short term, than Alternative 3 as a result of implementation of the fluid mineral leasing strategy (Appendix 17).
Special Management Area and Other Management Area Management Adverse impacts because of fire suppression restrictions within these areas.	Same as No Action Alternative, except impacts would be reduced because of the elimination of management actions associated with removing special management area designations.	Same as No Action Alternative, except impacts would be greatest under this alternative as a result of implementation of management actions associated with expansion and addition of special management areas.	Same as No Action Alternative, except impacts would be slightly greater as result of implementation of management actions associated with expansion and addition of special management areas.	Adverse impacts because of fire suppression restrictions within these areas. Impacts would be slightly greater than the No Action Alternative as a result of implementation of management actions associated with expansion and addition of special management areas and other management areas.
Fire Management Short-term, adverse impacts from vegetation removal associated with prescribed burns and suppression activities. Long-term beneficial impacts from enhancing vegetative conditions.	Same as No Action Alternative	Same as No Action Alternative, except impacts would be lessened because of reduced suppression efforts (limited suppression versus full suppression for basin big sagebrush/lemon scurfpea vegetation associations) and elimination of prescribed burning.	Same as No Action Alternative	Same as No Action Alternative: Short-term, adverse impacts from vegetation removal associated with prescribed burns and suppression activities. Long-term beneficial impacts from enhancing vegetative conditions.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Watershed Management Beneficial impacts from restoration and enhancement efforts, placement of buffer zones around riparian areas and floodplains, and restrictions on surface disturbing activities.	Same as No Action Alternative, except beneficial impacts would be reduced because of fewer restrictions on surface disturbing activities and smaller buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greater because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative: Beneficial impacts from restoration and enhancement efforts, placement of buffer zones around riparian areas, and floodplains, and restrictions on surface disturbing activities.
Wild Horse Management Minimal adverse impacts from trampling of riparian vegetation and subsequent erosion. Maintaining the appropriate management level would help minimize impacts.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except impacts would be reduced on the current HMA because of the greater distribution of the herd; impacts could be greater on the expanded portion of the HMA.	Same as No Action Alternative: Minimal adverse impacts from trampling of riparian vegetation and subsequent erosion. Maintaining the appropriate management level would help minimize impacts.
Livestock Grazing Management Adverse impacts from vegetation removal, soil compaction, and stream bank instability. Implementing Wyoming Standards for Healthy Rangelands would prevent impacts from becoming significant.	Same as No Action Alternative, except impacts would be greatest under this alternative because of reduced restrictions on grazing management and anticipated increases in livestock grazing.	Same as No Action Alternative, except impacts would be least intensive under this alternative because of greater restrictions on grazing management.	Same as No Action Alternative, except impacts would be slightly reduced because of greater restrictions on grazing management.	Same as No Action Alternative: Adverse impacts from vegetation removal, soil compaction, and stream bank instability. Implementing Wyoming Standards for Healthy Rangelands would prevent impacts from becoming significant.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Vegetation Management Overall beneficial impacts from enhancement and protection of vegetation resources. Short-term, adverse impacts from vegetation treatments.	Same as No Action Alternative, except beneficial impacts would be slightly reduced because of fewer protections afforded to special status plant species.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Overall beneficial impacts from enhancement and protection of vegetation resources. Short-term, adverse impacts from vegetation treatments.
Wildlife Habitat Management Beneficial impacts from enhancement of wildlife habitat, which promotes healthy plant communities.	Same as No Action Alternative, except beneficial impacts would be reduced because of less restrictive actions to improve wildlife habitat.	Same as No Action Alternative, except beneficial impacts would be greater because of more restrictive actions to improve wildlife habitat.	Same as No Action Alternative, except beneficial impacts would be slightly greater because of more restrictive actions to improve wildlife habitat.	Beneficial impacts from enhancement of wildlife habitat, which promotes healthy plant communities. Beneficial impacts would be greater than under the No Action Alternative because of expanded protection measures for greater sage-grouse habitat.
Heritage Resources Management Adverse impacts from surface disturbing excavations. Beneficial impacts because of limitations on surface disturbance near heritage sites.	Same as No Action Alternative	Same as No Action Alternative, except beneficial impacts would be greater because of increased limitations on surface disturbance near heritage sites.	Same as No Action Alternative	Same as No Action Alternative: Adverse impacts from surface disturbing excavations. Beneficial impacts because of limitations on surface disturbance near heritage sites.
Recreation Management Adverse impacts (erosion, soil compaction, sedimentation) from OHV use and camping activities within riparian corridors.	Same as No Action Alternative	Same as No Action Alternative, except impacts would be reduced because of camping restrictions and increased OHV use limitations.	Same as No Action Alternative, except impacts would be slightly reduced because of camping restrictions and increased OHV use limitations.	Same as No Action Alternative: Adverse impacts (erosion, soil compaction, sedimentation) from OHV use and camping activities within riparian corridors.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Mineral Resources Management Adverse impacts (erosion, sedimentation, stream bank instability) from related construction activities (e.g., well pads, access roads). Following management prescriptions could help to reduce adverse impacts.	Same as No Action Alternative, except impacts would be greatest under this alternative because of increased potential for mineral development.	Same as No Action Alternative, except impacts would be least extensive under this alternative because of decreased potential for mineral development.	Same as No Action Alternative, except impacts would be greater under this alternative because of increased potential for mineral development.	Adverse impacts (erosion, sedimentation, stream bank instability) from related construction activities (e.g., well pads, access roads). Following management prescriptions could help to reduce adverse impacts. Impacts would be similar to, but potentially greater in the short term, than Alternative 3 as a result of implementation of the fluid mineral leasing strategy (Appendix 17).
Special Management Area and Other Management Area Management Beneficial impacts from limitations placed on surface disturbing activities within special management areas and other management areas.	Same as No Action Alternative, except beneficial impacts would be reduced because of the elimination of management actions associated with removing special management area designations.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative as a result of implementation of management actions associated with expansion and addition of special management areas.	Same as No Action Alternative, except beneficial impacts would be slightly greater as a result of implementation of management actions associated with expansion and addition of special management areas.	Beneficial impacts from limitations placed on surface disturbing activities within special management areas. Beneficial impacts would be slightly greater than the No Action Alternative as a result of implementation of management actions associated with expansion and addition of special management areas and other management areas.
SUMMARY OF IMPACTS TO WILD HORSES				
Fire Management Short-term, adverse impacts from forage removal. Long-term beneficial impacts from enhanced forage conditions.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative	Same as No Action Alternative: Short-term, adverse impacts from forage removal. Long-term beneficial impacts from enhanced forage conditions.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Watershed Management Beneficial impacts from actions aimed at maintaining and enhancing vegetative conditions.	Same as No Action Alternative, except beneficial impacts could be reduced because of less restrictive watershed management actions (e.g., smaller buffer zones around riparian areas and floodplains).	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except beneficial impacts could be greater because of more restrictive watershed management actions (e.g., larger buffer zones around riparian areas and floodplains).	Same as No Action Alternative: Beneficial impacts from actions aimed at maintaining and enhancing vegetative conditions.
Wild Horse Management Beneficial impacts from enhanced forage conditions as a result of maintenance of the appropriate management level and promoting herd distribution.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except beneficial impacts could be greater because of improved herd distribution.	Same as No Action Alternative: Beneficial impacts from enhanced forage conditions as a result of maintenance of the appropriate management level and promoting herd distribution.
Livestock Grazing Management Beneficial impacts from compliance with healthy rangeland standards, thereby improving forage conditions. Potential adverse impacts from competition for forage resources.	Same as No Action Alternative, except adverse impacts would be greater because of anticipated increases in livestock grazing.	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from compliance with healthy rangeland standards, thereby improving forage conditions. Potential adverse impacts from competition for forage resources.
Vegetation Management Beneficial impacts from enhancement and protection of vegetation resources. Short-term, adverse impacts from vegetation treatments.	Same as No Action Alternative, except beneficial impacts would be slightly reduced because of fewer protections afforded to special status plant species.	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from enhancement and protection of vegetation resources. Short-term, adverse impacts from vegetation treatments.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Wildlife Habitat Management Beneficial impacts from enhancement of wildlife habitat, which promotes healthy plant communities.	Same as No Action Alternative, except beneficial impacts would be reduced because of less restrictive actions to improve wildlife habitat.	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except beneficial impacts would be slightly greater because of more restrictive actions to improve wildlife habitat.	Beneficial impacts from enhancement of wildlife habitat, which promotes healthy plant communities. Beneficial impacts would be greater than under the No Action Alternative because of expanded protection measures for greater sage-grouse habitat.
Heritage Resources Management Minimal adverse impacts from surface disturbing excavations and limitations on range improvements near heritage sites. Potential beneficial impacts from limitations on surface disturbance near heritage sites.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except beneficial impacts would be slightly greater because of increased limitations on surface disturbance near heritage sites.	Same as No Action Alternative: Minimal adverse impacts from surface disturbing excavations and because of limitations on range improvements near heritage sites. Potential beneficial impacts from limitations on surface disturbance near heritage sites.
Recreation Management Minimal adverse impacts from forage removal associated with dispersed recreation. Potentially greater adverse impacts from OHV use.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated because of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except impacts would be slightly reduced because of increased OHV use limitations.	Same as No Action Alternative: Minimal adverse impacts from forage removal associated with dispersed recreation. Potentially greater adverse impacts from OHV use.
Mineral Resources Management Adverse impacts from vegetation removal associated with construction of well pads and connector roads.	Same as No Action Alternative, except impacts would be greatest under this alternative because of the increased potential for mineral development.	Potential impacts within the planning area would be eliminated because of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except impacts would be greater under this alternative because of the increased potential for mineral development.	Adverse impacts from vegetation removal associated with construction of well pads and connector roads. Impacts would be similar to, but potentially greater in the short term, than Alternative 3 as a result of implementation of the fluid mineral leasing strategy (Appendix 17).

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Management Area and Other Management Area Management Beneficial impacts because of limitations placed on surface disturbing activities within special management areas and other management areas.	Same as No Action Alternative, except beneficial impacts would be reduced because of the elimination of management actions associated with removing special management area designations.	Potential impacts within the planning area would be eliminated because of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except beneficial impacts would be slightly greater as a result of implementation of management actions associated with expansion and addition of special management areas.	Beneficial impacts because of limitations placed on surface disturbing activities within special management areas. Beneficial impacts would be greater than the No Action Alternative as a result of implementation of management actions associated with expansion and addition of special management areas and other management areas.
SUMMARY OF IMPACTS TO LIVESTOCK GRAZING				
Fire Management Short-term, adverse impacts from forage removal. Long-term beneficial impacts from enhanced forage conditions.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Short-term, adverse impacts from forage removal. Long-term beneficial impacts from enhanced forage conditions.
Watershed Management Beneficial impacts from actions aimed at maintaining and enhancing vegetative conditions.	Same as No Action Alternative, except beneficial impacts could be reduced because of less restrictive watershed management actions (e.g., smaller buffer zones around riparian areas and floodplains).	Same as No Action Alternative, except beneficial impacts could be greater because of more restrictive watershed management actions (e.g., larger buffer zones around riparian areas and floodplains).	Same as No Action Alternative, except beneficial impacts could be greater because of more restrictive watershed management actions (e.g., larger buffer zones around riparian areas and floodplains).	Same as No Action Alternative: Beneficial impacts from actions aimed at maintaining and enhancing vegetative conditions.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Wild Horse Management Adverse impacts from competition for forage resources. Maintaining the appropriate management level would help minimize impacts.	Same as No Action Alternative	Beneficial impacts from elimination of wild horses from the planning area. Adverse impacts from limiting livestock use within allotments affected by wild horse fence construction. Certain allotments would be subdivided by construction of a fence designed to limit wild horse movement to the reestablished HMA boundary.	Same as No Action Alternative, except impacts could be reduced as a result of better distribution of wild horses. Adverse impacts could also be greater as a result of wild horse grazing within the expanded portion of the HMA.	Same as No Action Alternative: Adverse impacts from competition for forage resources. Maintaining the appropriate management level would help minimize impacts.
Livestock Grazing Management Short-term, adverse impacts from adjusting grazing plans to comply with healthy rangelands standards and grazing restrictions. Potential long-term, beneficial impacts from increased forage production and subsequent livestock growth rates.	Same as No Action Alternative, except adverse impacts would be reduced because of increased flexibility in managing livestock resources. Beneficial impacts could also potentially be reduced as a result of increases in grazing pressures on forage resources.	Same as No Action Alternative, except adverse impacts would be greater because of increased restrictions on grazing activities. Beneficial impacts could be greater as a result of enhanced forage conditions.	Same as No Action Alternative, except adverse impacts would be slightly greater because of increased restrictions on grazing activities. Beneficial impacts could be slightly greater as a result of enhanced forage conditions.	Same as No Action Alternative: Short-term, adverse impacts from adjusting grazing plans to comply with healthy rangelands standards and grazing restrictions. Potential long-term, beneficial impacts from increased forage production and subsequent livestock growth rates.
Vegetation Management Beneficial impacts from enhancement and protection of vegetation resources. Short-term, adverse impacts from vegetation treatments.	Same as No Action Alternative, except beneficial impacts would be slightly reduced because of fewer protections afforded to special status plant species.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from enhancement and protection of vegetation resources. Short-term, adverse impacts from vegetation treatments.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Wildlife Habitat Management Beneficial impacts from enhancement of wildlife habitat, which promotes healthy plant communities. Potential adverse impacts from competition for forage resources.	Same as No Action Alternative, except beneficial impacts would be reduced because of less restrictive actions to improve wildlife habitat. The potential for adverse impacts would be greater because of increased competition for forage resources.	Same as No Action Alternative, except beneficial impacts would be greater because of more restrictive actions to improve wildlife habitat. The potential for adverse impacts would be slightly greater because of increased competition for forage resources.	Same as No Action Alternative, except beneficial impacts would be slightly greater because of more restrictive actions to improve wildlife habitat. The potential for adverse impacts would be slightly greater because of increased competition for forage resources.	Beneficial impacts from enhancement of wildlife habitat, which promotes healthy plant communities. Potential adverse impacts from competition for forage resources. The potential for adverse impacts would be slightly greater than the No Action Alternative as a result of increased competition for forage resources. Beneficial impacts would also likely be greater than under the No Action Alternative because of expanded protection measures for greater sage-grouse.
Heritage Resources Management Minimal adverse impacts from surface disturbing excavations and limitations on range improvements near heritage sites. Potential beneficial impacts from limitations on surface disturbance near heritage sites.	Same as No Action Alternative	Same as No Action Alternative, except beneficial impacts would be greater because of increased limitations on surface disturbance near heritage sites.	Same as No Action Alternative, except beneficial impacts would be slightly greater because of increased limitations on surface disturbance near heritage sites.	Same as No Action Alternative: Minimal adverse impacts from surface disturbing excavations and limitations on range improvements near heritage sites. Potential beneficial impacts from limitations on surface disturbance near heritage sites.
Recreation Management Minimal adverse impacts from forage removal associated with dispersed recreation. Potentially greater adverse impacts from OHV use.	Same as No Action Alternative	Same as No Action Alternative, except impacts would be reduced because of increased OHV use limitations.	Same as No Action Alternative, except impacts would be slightly reduced because of increased OHV use limitations.	Same as No Action Alternative: Minimal adverse impacts from forage removal associated with dispersed recreation. Potentially greater adverse impacts from OHV use.
Mineral Resources Management Adverse impacts from vegetation removal associated with construction of well pads and connector roads.	Same as No Action Alternative, except impacts would be greatest under this alternative because of the increased potential for mineral development.	Same as No Action Alternative, except impacts would be least extensive under this alternative because of the decreased potential for mineral development.	Same as No Action Alternative, except impacts would be greater under this alternative because of the increased potential for mineral development.	Adverse impacts from vegetation removal associated with construction of well pads and connector roads. Impacts would be similar to, but potentially greater in the short term, than Alternative 3 as a result of implementation of the fluid mineral leasing strategy (Appendix 17).

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Management Area and Other Management Area Management Beneficial impacts from limitations placed on surface disturbing activities within special management areas and other management areas.	Same as No Action Alternative, except beneficial impacts would be reduced because of the elimination of management actions associated with removing special management area designations.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative as a result of implementation of management actions associated with expansion and addition of special management areas.	Same as No Action Alternative, except beneficial impacts would be slightly greater as a result of implementation of management actions associated with expansion and addition of special management areas.	Beneficial impacts from limitations placed on surface disturbing activities within special management areas. Beneficial impacts would be slightly greater than the No Action Alternative as a result of implementation of management actions associated with expansion and addition of special management areas and other management areas.
Fire Management Short-term adverse impacts from vegetation removal. Long-term beneficial impacts from enhancement of vegetation conditions and protection of special status and rare plant communities.	Same as No Action Alternative	Possible adverse impacts from reduction in vegetation treatments and not allowing full fire management in susceptible vegetation communities.	Same as No Action Alternative	Same as No Action Alternative: Short-term adverse impacts from vegetation removal. Long-term beneficial impacts from enhancement of vegetation conditions and protection of special status and rare plant communities.
Watershed Management Beneficial impacts from restoration and enhancement efforts, placement of buffer zones around riparian areas and floodplains, and restrictions on surface disturbing activities.	Same as No Action Alternative, except beneficial impacts would be reduced because of fewer restrictions on surface disturbing activities and smaller buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greater because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative: Beneficial impacts from restoration and enhancement efforts, placement of buffer zones around riparian areas and floodplains, and restrictions on surface disturbing activities.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Wild Horse Management Minimal, localized adverse impacts from grazing and competition for forage resources with wildlife and livestock. Maintaining the appropriate management level would help minimize impacts.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated because of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except impacts would be reduced because of the greater herd distribution achieved by expanding the Divide Basin Wild Horse Herd Management Area to cover the entire planning area.	Same as No Action Alternative: Minimal, localized adverse impacts from grazing and competition for forage resources with wildlife and livestock. Maintaining the appropriate management level would help minimize impacts.
Livestock Grazing Management Adverse impacts from vegetation removal, soil compaction, season-long grazing, and localized forage competition and overuse. Implementing healthy rangeland standards and guidelines for livestock grazing would prevent impacts from becoming significant.	Same as No Action Alternative, except adverse impacts would be greatest under this alternative because of increased grazing activity and less restrictive measures for range improvements and water developments.	Same as No Action Alternative, except adverse impacts would be less because of increased restrictions on livestock grazing activities.	Same as No Action Alternative.	Same as No Action Alternative: Adverse impacts from vegetation removal, soil compaction, season-long grazing, and localized forage competition and overuse. Implementing healthy rangeland standards and guidelines for livestock grazing would prevent impacts from becoming significant.
Heritage Resources Management Beneficial impacts through indirect preservation of rare and sensitive plant communities as well as general vegetative characteristics.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts through indirect preservation of rare and sensitive plant communities as well as general vegetative characteristics

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Travel, Access, and Realty Management Adverse impacts from damage and loss of vegetation and noxious weed invasion as a result of unauthorized use of OHVs. Beneficial impacts to special status plants from ROW limitations.	Same as No Action Alternative, except adverse impacts would be greater because of decreased restrictions on use and increased development.	Same as No Action Alternative, except adverse effects would be less because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Same as No Action Alternative, except adverse effects would be slightly less because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Adverse impacts from damage and loss of vegetation and noxious weed invasion as a result of unauthorized use of OHVs. Beneficial impacts to special status plants from ROW limitations. The adverse impacts would be less than the No Action Alternative because of increased restrictions on use and the development of a transportation plan specific to the planning area.
Recreation Management Adverse impacts from damage and loss of vegetation and noxious weed invasion as a result of concentrated recreational activity such as camping and recreational mining.	Same as No Action Alternative, except impacts would be greater because of fewer restrictions on use and increased development.	Same as No Action Alternative, except adverse effects would be less because of increased restrictions on use.	Same as No Action Alternative, except adverse effects would be slightly less because of increased restrictions on use and limiting recreational mining to a 5-acre site.	Same as No Action Alternative: Adverse impacts from damage and loss of vegetation and noxious weed invasion as a result of concentrated recreational activity such as camping and recreational mining.
Mineral Resources Management Adverse, short-term or long-term impacts from vegetation loss and noxious weed invasion as a result of related surface disturbing activities. Term of impacts is dependent on the success of reclamation efforts in disturbed areas. May affect, but will not adversely affect threatened and endangered species.	Same as No Action Alternative, except adverse impacts would be greater because of decreased restrictions on use and increased development. Potential significant impacts to BLM sensitive species because of the lack of protection from fluid mineral and geophysical activities and coal and sodium exploration.	Same as No Action Alternative, except adverse impacts would be greatly reduced because of increased restrictions on use and closure of planning area to the majority of mineral development activities, thereby allowing vegetation to recover.	Same as No Action Alternative, except adverse impacts would be reduced because of increased restrictions on use and opportunity to implement an adaptive management strategy to control timing of development.	Adverse, short-term or long-term impacts from vegetation loss and noxious weed invasion as a result of related surface disturbing activities. Term of impacts is dependent on the success of reclamation efforts in disturbed areas. Adverse impacts would be reduced by the " no lease" prescription for fluid minerals in a portion of the planning area and the ability to apply Conditions of Approval to existing leases that do not offer protection for special status plant species. May affect, but will not adversely affect threatened and endangered species.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Management Area and Other Management Area Management Long-term beneficial impacts from conservation of sensitive vegetation communities and limitations on surface disturbing activities.	Same as No Action Alternative, except beneficial impacts would be reduced by removal of ACEC designation from Steamboat Mountain and decreasing the viewshed associated with the South Pass Historic Landscape.	Same as No Action Alternative, except beneficial impacts would be much greater from expansion of the Steamboat Mountain, Greater Sand Dunes, and Special Status Plants ACECs, and the addition of the Cushion Plant Community ACEC and the Pinnacles Geologic Feature ACEC.	Same as No Action Alternative, except beneficial impacts would be much greater from expansion of the Steamboat Mountain, Greater Sand Dunes, and Special Status Plants ACECs, and the addition of the Cushion Plant Community ACEC.	Long-term beneficial impacts from conservation of sensitive vegetation communities and limitations on surface disturbing activities. Beneficial impacts would be greater than the No Action Alternative because of the expansion of the Steamboat Mountain ACEC and the addition of the West Sand Dunes Archaeological District, Steamboat Mountain Management Area, and protection of the Pinnacles Geologic Feature.
SUMMARY OF IMPACTS TO WILDLIFE HABITAT				
General Land and Water Resources Management Beneficial impacts or no net impact because of restrictions and protections associated with managing land and water resources.	Same as No Action Alternative, except beneficial impacts would be least extensive under this alternative because of reduced restrictions associated with uses of land and water resources.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative because of increased restrictions associated with uses of land and water resources.	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts or no net impact because of restrictions and protections associated with managing land and water resources.
Fire Management Adverse impacts from loss of cover from vegetation removal. Beneficial impacts from enhancing vegetation conditions.	Same as No Action Alternative	Same as No Action Alternative, except impacts would be less because prescribed fire is not considered under this alternative.	Same as No Action Alternative	Same as No Action Alternative: Adverse impacts from loss of cover from vegetation removal. Beneficial impacts from enhancing vegetation conditions.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Watershed Management Beneficial impacts from restoration and enhancement efforts, restrictions on surface disturbing activities, and placement of buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be reduced because of fewer restrictions on surface disturbing activities and smaller buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greater because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative: Beneficial impacts from restoration and enhancement efforts, restrictions on surface disturbing activities, and placement of buffer zones around riparian areas and floodplains.
Wild Horse Management Minimal, adverse impacts from localized forage competition. Maintaining the appropriate management level would help minimize impacts.	Same as No Action Alternative	Potential impacts within the planning area would be eliminated as a result of the exclusion of the planning area from the HMA.	Same as No Action Alternative, except impacts would be reduced because of the greater herd distribution achieved by expanding the Divide Basin Wild Horse Herd Management Area to cover the entire planning area.	Same as No Action Alternative: Minimal, adverse impacts from localized forage competition. Maintaining the appropriate management level would help minimize impacts.
Livestock Grazing Management Adverse impacts from vegetation removal, soil compaction, season-long grazing, and localized forage competition and overuse. Implementing healthy rangeland standards and guidelines for livestock grazing would prevent impacts from becoming significant.	Same as No Action Alternative, except impacts would be greatest under this alternative because of increased grazing activity and less restrictive measures for range improvements and water developments.	Same as No Action Alternative, except adverse impacts would be least extensive under this alternative because of increased restrictions on livestock grazing activities.	Same as No Action Alternative	Same as No Action Alternative: Adverse impacts from vegetation removal, soil compaction, season-long grazing, and localized forage competition and overuse. Implementing healthy rangeland standards and guidelines for livestock grazing would prevent impacts from becoming significant.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Vegetation Management Beneficial impacts to sensitive species associated with special status plants.	Same as No Action Alternative, except beneficial impacts would be reduced because of fewer restrictions associated with special status plants.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts to sensitive species associated with special status plants.
Heritage Resources Management Beneficial impacts through indirect preservation of habitat as well as general habitat characteristics.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts through indirect preservation of habitat as well as general habitat characteristics.
Travel, Access, and Realty Management Adverse impacts from damage and loss of vegetation and noxious weed invasion as a result of unauthorized use of OHVs. Adverse impacts from increased access, human disturbance, and surface disturbing activities. Possible significant impacts if communication sites and related access routes were placed in or near sensitive habitats. Protections for sensitive habitats would reduce adverse impacts.	Same as No Action Alternative, except adverse impacts would be greater because of decreased restrictions on use and increased development.	Same as No Action Alternative, except adverse effects would be less because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Same as No Action Alternative, except adverse effects would be slightly less because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Adverse impacts from damage and loss of vegetation and noxious weed invasion as a result of unauthorized use of OHVs. Adverse impacts from increased access, human disturbance, and surface disturbing activities. Possible significant impacts if communication sites or related access routes were placed in or near sensitive habitat. Adverse effects would be less because of development of a transportation plan specific to the planning area. Protections for sensitive habitats would also reduce adverse impacts.
Recreation Management Temporary, adverse impacts because of increased human disturbance.	Same as No Action Alternative	Same as No Action Alternative, except adverse effects would be less because of increased restrictions on use.	Same as No Action Alternative, except adverse effects would be less because of increased restrictions on use.	Same as No Action Alternative: Temporary, adverse impacts because of increased human disturbance.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Mineral Resources Management Adverse impacts from associated surface disturbing and disruptive activity. Protections placed on sensitive habitats would reduce adverse impacts. Significance of adverse impacts is undetermined based on unknown location and timing of development activities.	Same as No Action Alternative, except adverse impacts would be significant under this alternative because of decreased restrictions on use and increased development.	Same as No Action Alternative, except adverse impacts would be least extensive under this alternative because of increased restrictions on use and closure of the planning area to the majority of mineral development activities.	Same as No Action Alternative, except adverse impacts would be reduced because of increased restrictions on use and opportunity to implement an adaptive management strategy to control timing of development.	Potentially significant adverse impacts, depending on the amount, timing, and duration of activity, from associated surface disturbing and disruptive activity on existing leases. Adverse impacts would be reduced by closing portions of the planning area to fluid mineral leasing and the ability to apply Conditions of Approval to existing leases that do not offer protection for wildlife resources.
Special Management Area and Other Management Area Management Long-term beneficial impacts from conservation and enhancement of sensitive habitat and limitations on surface disturbing activities.	Same as No Action Alternative, except beneficial impacts would be reduced by removal of the ACEC designation from Steamboat Mountain.	Same as No Action Alternative, except beneficial impacts would be much greater from expansion of the Steamboat Mountain, Greater Sand Dunes, and Special Status Plants ACECs, and the addition of the Cushion Plant Community ACEC and the Pinnacles Geologic Feature ACEC.	Same as No Action Alternative, except beneficial impacts would be much greater from expansion of the Steamboat Mountain, Greater Sand Dunes, and Special Status Plants ACECs, and the addition of the Cushion Plant Community ACEC.	Long-term beneficial impacts from conservation of sensitive vegetation communities and limitations on surface disturbing activities. Beneficial impacts would increase as a result of the expansion of Steamboat Mountain ACEC, protection of the Pinnacles Geologic Feature, and the addition of the West Sand Dunes Archeological District and Steamboat Mountain Management Area.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
SUMMARY OF IMPACTS TO HERITAGE RESOURCES				
Land and Water Resources Management Beneficial impacts because of restrictions on surface disturbing and disruptive activities to protect water, vegetation, and wildlife resources.	Same as No Action Alternative, except beneficial impacts would be least extensive under this alternative because of fewer restrictions on surface disturbing and disruptive activities.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative because of increased restrictions on surface disturbing and disruptive activities.	Same as No Action Alternative, except beneficial impacts would be slightly greater because of increased restrictions on surface disturbing and disruptive activities.	Beneficial impacts because of restrictions on surface disturbing and disruptive activities to protect water, vegetation, and wildlife resources. Beneficial impacts would be slightly greater than under the No Action Alternative because of increased restrictions on surface disturbing and disruptive activities.
Travel, Access, and Realty Management Adverse impacts from increased access, human disturbance, surface disturbing activities, and unauthorized OHV use. Absence of a transportation plan could maintain impacts.	Same as No Action Alternative	Same as No Action Alternative, except adverse effects would be less because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Same as No Action Alternative, except adverse effects would be slightly less because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Adverse impacts from increased access, human disturbance, surface disturbing activities, and unauthorized OHV use. Impacts could be reduced as a result of the implementation of a transportation plan specific to the planning area.
Recreation Management Indirect, adverse impacts from human disturbance. Beneficial impacts as a result of implementation of public education and interpretive programs that encourage protection of heritage resources. Expansion of the Greater Sand Dunes Recreation Area parking lot and camping facilities could increase adverse impacts.	Same as No Action Alternative, except adverse impacts could be slightly reduced as a result of not expanding the Greater Sand Dunes Recreation Area parking lot and camping facilities.	Same as No Action Alternative, except adverse impacts could be reduced because of increased restrictions on use and as a result of not expanding the Greater Sand Dunes Recreation Area parking lot and camping facilities.	Same as No Action Alternative, except adverse impacts could be slightly reduced because of increased restrictions on use and as a result of not expanding the Greater Sand Dunes Recreation Area parking area and camping facilities.	Same as No Action Alternative: Indirect, adverse impacts from human disturbance. Beneficial impacts as a result of implementation of public education and interpretive programs that encourage protection of heritage resources. Expansion of the Greater Sand Dunes Recreation Area parking lot and camping facilities could increase adverse impacts.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Mineral Resources Management Adverse impacts from potential surface disturbance over approximately 1,800 acres. Pre-authorization inventory and avoidance would help to minimize impacts.	Adverse impacts from potential surface disturbance over approximately 2,100 acres. Pre-authorization inventory and avoidance would help to minimize impacts.	Adverse impacts from potential surface disturbance over approximately 1,300 acres. Pre-authorization inventory and avoidance would help to minimize impacts.	Adverse impacts from potential surface disturbance over approximately 1,600 acres. Pre-authorization inventory and avoidance would help to minimize impacts.	Same as Alternative 3: Adverse impacts from potential surface disturbance over approximately 1,600 acres. Pre-authorization inventory and avoidance would help to minimize impacts.
Visual Resources Management Beneficial impacts by prohibiting surface disturbing and construction activities in certain areas that might contain heritage resources. Viewsheds and historic resources located within higher VRM classifications could be adversely affected.	Same as No Action Alternative, except beneficial impacts would be reduced as a result of issuance of less restrictive VRM classifications over larger areas.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative as a result of issuance of more restrictive VRM classifications over larger areas.	Same as No Action Alternative, except beneficial impacts could be slightly greater as a result of issuance of more restrictive VRM classifications over larger areas.	Beneficial impacts by prohibiting surface disturbing and construction activities in certain areas that might contain heritage resources. Viewsheds and historic resources located within higher VRM classifications could be adversely affected. Beneficial impacts would be slightly greater than the No Action Alternative as a result of issuance of more restrictive VRM classifications over larger areas.
Special Management Area and Other Management Area Management Beneficial impacts from the protections and management prescriptions applied to special management areas and other management areas.	Same as No Action Alternative, except beneficial impacts would be least extensive under this alternative because of the elimination of management actions associated with removing special management area designation from Steamboat Mountain ACEC.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative as a result of implementation of management actions associated with expansion and designation of special management areas.	Same as No Action Alternative, except beneficial impacts would be slightly greater as a result of implementation of management actions associated with expansion and designation of special management areas.	Beneficial impacts from the protections and management prescriptions applied to special management areas. Impacts would be slightly greater than under the No Action Alternative as a result of implementation of management actions associated with the expansion of the Steamboat Mountain ACEC and the addition of the West Sand Dunes Archaeological District, Steamboat Mountain Management Area, and protection of the Pinnacles Geologic Feature.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
SUMMARY OF IMPACTS TO TRAVEL, ACCESS, AND REALTY				
Land and Water Resources Management Adverse impacts from restrictions on surface disturbing and disruptive activities to protect water, vegetation, and wildlife resources.	Same as No Action Alternative, except impacts would be least extensive under this alternative because of fewer restrictions on surface disturbing and disruptive activities.	Same as No Action Alternative, except impacts would be greatest under this alternative because of increased restrictions on surface disturbing and disruptive activities.	Same as No Action Alternative, except impacts would be slightly greater because of increased restrictions on surface disturbing and disruptive activities.	Adverse impacts from restrictions on surface disturbing and disruptive activities to protect water, vegetation, and wildlife resources. Impacts would be slightly greater than under the No Action Alternative because of increased restrictions on surface disturbing and disruptive activities.
Travel, Access, and Realty Management *Transportation Planning*: Beneficial impacts by providing for appropriate ingress, egress, and access routes.	Same as No Action Alternative	Beneficial and/or adverse impacts as a result of the development of a transportation plan that could facilitate and/or restrict travel, access, and realty actions. Adverse impacts would be greatest under this alternative because the plan would provide maximum protection for crucial habitats and sensitive resources.	Same as Alternative 2, except adverse impacts would be reduced because of less restrictive measures to protect crucial habitats and sensitive resources.	Beneficial and/or adverse impacts as a result of the development of a transportation plan that could facilitate and/or restrict travel, access, and realty actions. Adverse impacts would be slightly reduced compared with Alternative 3 because of less restrictive measures to protect crucial habitats and sensitive resources.
Geophysical: Placing restrictions on geophysical activities could adversely impact users.	Same as No Action Alternative, except impacts would be reduced because of fewer restrictions on geophysical activities.	Same as No Action Alternative, except impacts would be greatest under this alternative because of increased restrictions on geophysical activities.	Same as No Action Alternative, except impacts would be greater because of increased restrictions on geophysical activities.	Placing restrictions on geophysical activities could adversely impact users. Impacts could be slightly greater than the No Action Alternative because of increased restrictions on geophysical activities.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Rights-of-way: Placing restrictions (i.e., exclusion and avoidance areas) on rights-of-way activities could adversely impact users.	Same as No Action Alternative, except impacts would be reduced because of fewer restrictions on rights-of-way activities.	Same as No Action Alternative, except impacts would be greatest under this alternative because of increased restrictions on rights-of-way activities.	Same as No Action Alternative, except impacts would be greater because of increased restrictions on rights-of-way activities.	Placing restrictions (i.e., exclusion and avoidance areas) on rights-of-way activities could adversely impact users. Impacts could be slightly greater than the No Action Alternative because of increased restrictions on rights-of-way activities.
Off-Highway Vehicle Use: Minimal adverse impacts because of implementation of OHV use designations that would control and limit travel within the planning area.	Same as No Action Alternative, except impacts would be least extensive under this alternative because of less restrictive OHV use designations.	Same as No Action Alternative, except impacts would be greatest under this alternative because of more restrictive OHV use designations.	Same as No Action Alternative, except impacts would be slightly greater because of more restrictive OHV use designations.	Same as No Action Alternative: Minimal adverse impacts because of implementation of OHV use designations that would control and limit travel within the planning area.
Mineral Resources Management Beneficial impacts by increasing access and expanding transportation routes associated with mineral development.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative because more of the planning area would be open to mineral development.	Same as No Action Alternative, except beneficial impacts would be least extensive under this alternative because most of the planning area would be closed to mineral development.	Same as No Action Alternative, except beneficial impacts would be reduced because of increased restrictions on mineral development.	Beneficial impacts by increasing access and expanding transportation routes associated with mineral development. Beneficial impacts would be reduced compared with the No Action Alternative because of increased restrictions on mineral development.
Visual Resources Management Adverse impacts because of restrictions imposed by VRM classifications.	Same as No Action Alternative, except impacts would be reduced as a result of issuance of less restrictive VRM classifications over larger areas.	Same as No Action Alternative, except impacts would be greatest under this alternative as a result of issuance of more restrictive VRM classifications over larger areas.	Same as No Action Alternative, except impacts could be slightly greater under this alternative as a result of issuance of more restrictive VRM classifications over larger areas.	Adverse impacts because of restrictions imposed by VRM classifications. Impacts would be slightly greater than the No Action Alternative as a result of issuance of more restrictive VRM classifications over larger areas.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Fire Management No net impact	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No net impact
Watershed Management Beneficial impacts from maintaining healthy watersheds, which enhance the recreational experience.	Same as No Action Alternative, except beneficial impacts would be reduced because of fewer restrictions on surface disturbing activities and smaller buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative, except beneficial impacts would be greater because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.	Same as No Action Alternative: Beneficial impacts from maintaining healthy watersheds, which enhance the recreational experience.
Wild Horse Management No net impact	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No net impact
Livestock Grazing Management Minimal, adverse impacts from degradation of rangeland resources, especially within riparian areas.	Same as No Action Alternative, except impacts could be more extensive because of fewer restrictions on livestock management.	Same as No Action Alternative, except impacts could be less extensive because of increased restrictions on livestock management.	Same as No Action Alternative, except impacts could be less extensive because of increased restrictions on livestock management.	Same as No Action Alternative: Minimal, adverse impacts from degradation of rangeland resources, especially within riparian areas.
Vegetation Management Beneficial impacts from maintaining diverse vegetation communities, which enhance the recreational experience.	Same as No Action Alternative, except beneficial impacts would be reduced because of fewer protections afforded to special status plant species.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from maintaining diverse vegetation communities, which enhance the recreational experience.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Wildlife Habitat Management Beneficial impacts to users (including hunters) from protection of wildlife habitat. Temporary, adverse impacts because of limitations on seasonal use to protect sensitive plants and wildlife habitat.	Same as No Action Alternative, except beneficial impacts would be reduced with decreased habitat protection.	Same as No Action Alternative, except beneficial impacts would be greater with increased habitat protection.	Same as No Action Alternative, except beneficial impacts would be greater with increased habitat protection.	Beneficial impacts to users (including hunters) from protection of wildlife habitat. Temporary, adverse impacts because of limitations on seasonal use to protect sensitive plants and wildlife habitat. Beneficial impacts would be greater than the No Action Alternative because of increased habitat protection under the proposed implementation, monitoring and evaluation process.
Heritage Resources Management Beneficial impacts by providing users with interpretive materials on historical and cultural sites of interest.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts by providing users with interpretive materials on historical and cultural sites of interest.
Travel, Access and Realty Management Existing roads and trails provide adequate vehicle access in the planning area for recreational purposes. The OHV designations and adherence to them would minimize adverse impacts on recreation resources by limiting disturbance to vegetation, watersheds, and wildlife.	Fewer restrictions on OHV use would benefit those recreationists that participate in OHV activities but could have adverse effects on users that prefer non-motorized forms of recreation.	Increased restrictions on OHV use could adversely affect OHV users but could have a beneficial effect on those recreationists that prefer non-motorized forms of recreation.	Same as No Action Alternative	Same as No Action Alternative: Existing roads and trails provide adequate vehicle access in the planning area for recreational purposes. The OHV designations and adherence to them would minimize adverse impacts on recreation resources by limiting disturbance to vegetation, watersheds, and wildlife.
Recreation Management Beneficial impacts as a result of management actions aimed at maintaining and improving recreation resources.	Same as No Action Alternative, except beneficial impacts would be reduced because of decreased recreational planning.	Same as No Action Alternative, except impacts would be greater because of increased recreational planning.	Same as No Action Alternative, except impacts would be greater because of increased recreational planning.	Beneficial impacts as a result of management actions aimed at maintaining and improving recreation resources. Beneficial impacts would be greater than the No Action Alternative because of increased recreational planning.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Mineral Resources Management Adverse impacts from degrading the overall recreational experience as a result of visual and auditory intrusions.	Same as No Action Alternative, except impacts would be greatest under this alternative because of the increased potential for mineral development.	Same as No Action Alternative, except impacts would be least extensive under this alternative because of the decreased potential for mineral development.	Same as No Action Alternative, except impacts would be reduced because of the decreased potential for mineral development.	Adverse impacts from degrading the overall recreational experience as a result of visual and auditory intrusions. Impacts would be reduced compared with the No Action Alternative because of the decreased potential for mineral development.
Visual Resources Management VRM classifications would have beneficial effects on the recreation resources and users by ensuring that surface disturbing activities would be compatible with the existing character of the landscape and that visual intrusions would not adversely affect the recreational experience.	Same as No Action Alternative, except beneficial impacts would be reduced as a result of issuance of less restrictive VRM classifications over larger areas.	Same as No Action Alternative, except beneficial impacts would be greatest under this alternative as a result of issuance of more restrictive VRM classifications over larger areas.	Same as No Action Alternative, except beneficial impacts could be slightly greater under this alternative as a result of issuance of more restrictive VRM classifications over larger areas.	Classifications would have beneficial effects on the recreation resources and users by ensuring that surface disturbing activities would be compatible with the existing character of the landscape and that visual intrusions would not adversely affect the recreational experience. Impacts would be slightly greater than the No Action Alternative as a result of issuance of more restrictive VRM classifications over larger areas.
Special Management Area and Other Management Area Management Beneficial impacts on recreational users by minimizing incompatible uses in special management areas and providing areas for solitude and primitive recreational opportunities.	Same as No Action Alternative, except impacts would be reduced because of the elimination of management actions associated with removing the special management area designation from Steamboat Mountain ACEC.	Same as No Action Alternative, except impacts would be greatest under this alternative as a result of implementation of management actions associated with expansion and additional of special management areas.	Same as No Action Alternative, except impacts would be slightly greater as a result of implementation of management actions associated with expansion and additional of special management areas.	Beneficial impacts on recreational users by minimizing incompatible uses in special management areas and providing areas for solitude and primitive recreational opportunities. Impacts would be slightly greater than the No Action Alternative as a result of implementation of management actions associated with the expansion of the Steamboat Mountain ACEC and the addition of the West Sand Dunes Archaeological District, Steamboat Mountain Management Area, and protection of the Pinnacles Geologic Feature.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
SUMMARY OF IMPACTS TO MINERAL AND ALTERNATIVE ENERGY RESOURCES				
Summary of Impacts to Fluid Minerals				
All Resource Categories with Mineral-Related Provisions or Restrictions Adverse impacts from the absence of the planning criteria needed for development of stipulations of oil and gas leases in the core area. Potential adverse impacts because of the lack of resource protection requirements for site-specific analyses for APDs needed for lease development.	Adverse impacts would be minimized as a result of management actions that would provide for the maximum amount of leasing and development allowable under existing laws and regulations.	Adverse impacts from discontinuation of leasing and development in all portions of the planning area with sensitive resources. Loss of potential, additional development on existing leases that were purchased from current leaseholders.	Adverse impacts as a result of stipulations on leasing and development activities where indicators of sensitive resources show that rates of development need to be controlled to prevent adverse impacts. Adverse impacts might also occur where surface use restrictions make development not economically viable.	Adverse impacts as a result of stipulations on leasing and development activities where indicators of sensitive resources show that rates of development need to be controlled to prevent adverse impacts. Leases placed in suspension would not be developed until the suspension was lifted, based on monitoring of sensitive resources to assess potential impacts. Adverse impacts might also occur where surface use restrictions make development not economically viable.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Summary of Impacts to Leasable Solid Minerals				
All Resource Categories with Mineral-Related Provisions or Restrictions Adverse impacts would occur from closing areas to leasing, including the WSAs and the western part of the Greater Sand Dunes ACEC. Surface use restrictions might make some coal resources not economically viable.	Adverse impacts would be minimized as a result of management actions that provided for increased leasing and development. Some impacts would occur because of mining restrictions within certain sensitive resource areas and because of requirements related to current laws and regulations.	Adverse impacts would include closing of federal coal lands within the Coal and Sodium Occurrence and Development Potential Area to future leasing and development	Same as No Action Alternative	Same as No Action Alternative: Adverse impacts would occur from closing areas to leasing, including the WSAs and the western part of the Greater Sand Dunes ACEC. Surface use restrictions might make some coal resources not economically viable.
Summary of Impacts to Locatable Minerals				
All Resource Categories with Mineral-Related Provisions or Restrictions Adverse impacts as a result of withdrawals from locatable minerals specified in the Green River RMP. Adverse impacts would also occur for proposed mining claims where a required plan of operations caused mining to not be economically viable.	Minimal adverse impacts as a result of withdrawals from locatable minerals specified in the Green River RMP.	Adverse impacts as a result of withdrawing the planning area from filing of mineral claims, exploration, and development of locatable minerals, including recreational use mining activity. Impacts would include loss of current claims found not to be valid, and no new claims could be located in the planning area.	Same as No Action Alternative, except impacts would be slightly greater as a result of additional withdrawals. The northern elk calving areas and the potential diamond-bearing area of Steamboat Mountain ACEC would be withdrawn. Withdrawals would also be proposed for areas where general land use is classified as no surface occupancy.	Adverse impacts as a result of withdrawals from locatable minerals specified in the Green River RMP. Adverse impacts would also occur for proposed mining claims where a required plan of operations causes mining to not be economically viable. Impacts would be slightly greater than the No Action Alternative due to additional withdrawals. The northern elk calving areas and the potential diamond-bearing area of Steamboat Mountain ACEC would be withdrawn.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Summary of Impacts to Salable Minerals				
All Resource Categories with Mineral-Related Provisions or Restrictions Adverse impacts would include loss of salable mineral resources where such activity would cause unacceptable impacts. Requiring mining and reclamation plans and that management be in conformance with other resource objectives could make use of mineral materials not economically viable.	Same as No Action Alternative	Adverse impacts would include loss of the use of salable minerals due to closure of the planning area to mineral material sales. Such sales would only be allowed to meet other planning objectives.	Same as No Action Alternative, except impacts would be slightly greater as a result of additional closures. The lava rock portion of Steamboat Mountain would be closed to mineral material sales, which is the most desirable mineral material resource identified in the planning area. The area within ½ mile of greater sage-grouse leks would also be closed.	Adverse impacts would include loss of salable mineral resources where such activity would cause unacceptable impacts. Requiring mining and reclamation plans and that management be in conformance with other resource objectives could make use of mineral materials not economically viable. Impacts would be slightly greater than the No Action Alternative as a result of additional closures. The lava rock portion of Steamboat Mountain would be closed to mineral material sales, which is the most desirable mineral material resource identified in the planning area. The Pinnacles Geologic Feature would also be closed.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Summary of Impacts to Alternative Energy Resources				
All Resource Categories with Mineral-Related Provisions or Restrictions No net impact. Alternative energy development is not discussed or analyzed under the No Action Alternative (no related action in the Green River RMP).	Beneficial impacts by allowing for the maximum level of alternative energy resource development within the planning area.	Adverse impacts as a result of closure of the planning area to all alternative energy development proposals.	Beneficial impacts by allowing for alternative energy resource development within the planning area, except where such activity would cause unacceptable impacts to sensitive resources. Where favorable development conditions coexist with sensitive resources, the alternative would have a negative impact on alternative energy resources.	Same as Alternative 3: Beneficial impacts by allowing for alternative energy resource development within the planning area, except where such activity would cause unacceptable impacts to sensitive resources. Where favorable development conditions coexist with sensitive resources, this alternative would have a negative impact on alternative energy resources.
SUMMARY OF IMPACTS TO VISUAL RESOURCES				
Land and Water Resources Management Beneficial impacts from management actions that serve to maintain or enhance land and water resources. Possible adverse impacts from developments designed to facilitate management of land and water resources.	Same as No Action Alternative, except beneficial impacts would be least extensive and adverse impacts would be most extensive under this alternative because of less restrictive management actions and requirements for developments.	Same as No Action Alternative, except beneficial impacts would be most extensive and adverse impacts would be least extensive under this alternative because of more restrictive management actions and requirements for developments.	Same as No Action Alternative, except beneficial impacts would be increased and adverse impacts would be reduced because of more restrictive management actions and requirements for developments.	Beneficial impacts from management actions that serve to maintain or enhance land and water resources. Possible adverse impacts from developments designed to facilitate management of land and water resources. Beneficial impacts could be slightly increased and adverse impacts could be reduced compared with the No Action Alternative because of more restrictive management actions and requirements for developments.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Heritage Resources Management Beneficial impacts by enhancing the visual character of the planning area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts by enhancing the visual classification of the planning area.
Travel, Access, and Realty Management Adverse impacts from ROW construction activity, increased access, and vehicular travel. Impacts would be minimized by identifying and controlling highly traveled routes and providing for orderly development that would be compatible with VRM objectives. OHV use designations would reduce impacts related to this activity.	Same as No Action Alternative	Same as No Action Alternative, except impacts would be least extensive under this alternative as a result of the implementation of a transportation plan and increased restrictions on ROWs and OHV use.	Same as No Action Alternative, except impacts would be least extensive under this alternative as a result of the implementation of a transportation plan and increased restrictions on ROWs and OHV use.	Adverse impacts from ROW construction activity, increased access, and vehicular travel. Impacts would be minimized by identifying and controlling highly traveled routes and providing for orderly development that would be compatible with VRM objectives. OHV use designations would reduce impacts related to this activity. Impacts would be reduced compared with the No Action Alternative as a result of implementation of a transportation plan and increased restrictions on ROWs.
Recreation Management No net impact on the visual character of the landscape. Increased recreational activity could potentially affect the scenic quality of localized areas that experience increased use. However, such impacts would likely be insignificant because these small areas would be closed if resource damage were to occur.	No net impact on the visual character of the landscape. The user could likely be affected by visual intrusions on the landscape that could occur in a majority of the planning area.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No net impact on the visual character of the landscape. Increased recreational activity could potentially affect the scenic quality of localized areas that experience increased use. However, such impacts would likely be insignificant because these small areas would be closed if resource damage were to occur.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Mineral Resources Management Adverse impacts from surface disturbing activities that alter the visual characteristics of the landscape. Mitigation requirements and mineral withdrawals would help reduce impacts.	Same as No Action Alternative, except impacts would be slightly reduced because there would be less Class II land area with the change in VRM Class of the Steamboat Mountain area.	Same as No Action Alternative, except impacts would be reduced because of decreased potential for mineral development.	Same as No Action Alternative, except the significance of this impact would depend on the amount of development projected to occur on existing leases within Class I and Class II areas and the extent of mitigation (siting, painting, screening) applied to the proposed activity to protect scenic quality.	Adverse impacts from surface disturbing activities that alter the visual characteristics of the landscape. Mitigation requirements and mineral withdrawals would help reduce impacts. The significance of this impact would depend on the amount of development projected to occur on existing leases within Class I and Class II areas and the extent of mitigation (siting, painting, screening) applied to the proposed activity to protect scenic quality.
Special Management Area and Other Management Area Management Beneficial impacts on the visual character and scenic quality of the landscape as a result of VRM classifications assigned to special management areas and other management areas.	Same as No Action Alternative, except beneficial impacts would be slightly reduced because of a reduction in Class II designations.	Same as No Action Alternative, except beneficial impacts would be greatest because of increases in Class I and Class II designations.	Same as No Action Alternative, except beneficial impacts would be greater because of increases in Class I and Class II designations.	Beneficial impacts on the visual character and scenic quality of the landscape as a result of VRM classifications assigned to special management areas and other management areas. Beneficial impacts would be greater than the No Action Alternative because of an increase in Class II designations.
SUMMARY OF IMPACTS TO SPECIAL MANAGEMENT AREAS AND OTHER MANAGEMENT AREAS				
Land and Water Resources Management Beneficial impacts from limitations on surface disturbing activities, vegetation removal, and season of use, and modifications of action if necessary to be consistent with management prescriptions for special management areas and other management areas.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from limitations on surface disturbing activities, vegetation removal, and season of use, and modifications of action if necessary to be consistent with management prescriptions for special management areas and other management areas.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Heritage Resources Management Beneficial impacts through preservation of resources and indirect preservation of vegetation and wildlife habitat.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts through preservation of resources and indirect preservation of vegetation and wildlife habitat.
Travel, Access, and Realty Management Beneficial impacts from identifying and controlling highly traveled routes, adhering to OHV designations, and providing orderly development.	Same as No Action Alternative, except beneficial impacts would be reduced because of decreased restrictions on use and increased development.	Same as No Action, except beneficial impacts would be increased because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Same as No Action, except beneficial impacts would be increased because of increased restrictions on use, decreased development, and the development of a transportation plan specific to the planning area.	Beneficial impacts from identifying and controlling highly traveled routes, adhering to OHV designations, and providing orderly development. Beneficial impacts would be greater than the No Action Alternative because of increased restrictions on use, staged development, and the development of a transportation plan specific to the planning area.
Recreation Management Beneficial impacts from preparation of recreation site plans and recreation project plans.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts from preparation of recreation site plans and recreation project plans.
Mineral Resources Management Adverse impacts from associated surface disturbing and disruptive activities. Implementing management prescriptions and interim management guidelines would prevent impacts from becoming significant.	Significant adverse impacts from associated surface disturbing activities. Implementing management prescriptions and interim management guidelines would reduce adverse impacts.	Same as No Action Alternative, except adverse impacts would be much less because of increased restrictions on use, expansion of special management areas, and closure of planning area to the majority of mineral development activities.	Same as No Action Alternative, except adverse impacts would be much less because of increased restrictions on use, expansion of special management areas, and closure of planning area to the majority of mineral development activities.	Adverse impacts from associated surface disturbing and disruptive activities. Adverse impacts would be less than the No Action Alternative because of increased restrictions and protection of the Pinnacles Geologic Feature. Implementing management prescriptions and interim management guidelines would prevent impacts from becoming significant.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Visual Resources Management Beneficial impacts through Class I and Class II designations on the majority of special management areas within the planning area.	Same as No Action Alternative	Beneficial impacts through Class I designations on all special management areas.	Same as No Action Alternative	Same as No Action Alternative: Beneficial impacts through Class I and Class II designations on the majority of special management areas within the planning area.
SUMMARY OF IMPACTS TO AIR RESOURCES				
All Resource Categories Impacts to air quality would include emissions from oil and gas development on existing leases in the planning area, development of new leases outside the core area, and operation of existing wells and compressors throughout the planning area. Vehicular and fire activity would also produce emissions that would degrade air quality and visibility.	Same as No Action Alternative, except impacts would be greater because of anticipated increases in mineral development and vehicular activity.	Same as No Action Alternative, except impacts would be substantially reduced because of increased restrictions on mineral development, prohibition of development of new leases within sensitive resource areas, and discontinuance of operation of certain wells and compressors through lease buy-backs.	Same as No Action Alternative, except impacts would be slightly reduced because of increased restrictions on mineral development and adaptive management measures that might impose timing requirements and cause certain leases to be suspended.	Impacts to air quality would include emissions from oil and gas development on existing leases in the planning area, development of new leases, and operation of existing wells and compressors throughout the planning area. Impacts would be reduced compared with the No Action Alternative because of increased restrictions on mineral development and closure of a portion of the planning area to new leasing.
SUMMARY OF IMPACTS TO SOCIOECONOMICS				
Fire Management No measurable impact	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No measurable impact
Watershed Management No measurable impact	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No measurable impact
Wild Horse Management No measurable impact	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No measurable impact

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Livestock Grazing Management Increased economic benefits with the support, on average, of eight jobs per year and increased total earnings of $1.4 million over the 20-year study period.	Average annual jobs supported would increase to 16, and total earnings would increase to $2.7 million over the 20-year study period.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Increased economic benefits with the support, on average, of eight jobs per year and increased total earnings of $1.4 million over the 20-year study period.
Vegetation Management No measurable impact	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: No measurable impact
Wildlife Habitat Management Impacts analyzed under Recreation Management.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Impacts analyzed under Recreation Management.
Heritage Resources Management Impacts analyzed under Recreation Management.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Impacts analyzed under Recreation Management.
Recreation Management Increased economic benefits with the support, on average, of 23 jobs per year and increased total earnings of $3.4 million over the 20-year study period.	Slight decrease in average employment (22) and earnings ($3.3 million) from the No Action Alternative	Slight decrease in average employment (22) and total earnings ($3.3 million) from the No Action Alternative.	Slight decrease in average employment (20) and total earnings ($3.0 million) from the No Action Alternative.	Slight increase in employment and total earnings from the No Action Alternative.
Mineral Resources Management Increased economic benefits with the support, on average, of 128 jobs per year; increased total earnings by $53 million; and increased mineral tax revenues to $101 million.	Increase in potential average annual employment (148), total earnings ($59 million), and mineral tax revenues ($114 million) from the No Action Alternative.	Decrease in potential average annual employment (100), total earnings ($43 million), and mineral tax revenues ($85 million) from the No Action Alternative.	Decrease in potential average annual employment (121), total earnings ($51 million), and mineral tax revenues ($97 million) from the No Action Alternative.	Same as Alternative 3: Decrease in potential average annual employment (121), total earnings ($51 million), and mineral tax revenues ($97 million) from the No Action Alternative.

No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Special Management Area and Other Management Area Management Impacts analyzed under Recreation Management.	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative	Same as No Action Alternative: Impacts analyzed under Recreation Management.

CHAPTER 3—AFFECTED ENVIRONMENT

The affected environment is the baseline (see Table 3-1 at the end of Chapter 3) against which potential impacts caused by the planning alternatives are assessed. This chapter focuses on the natural and physical human environment that has the potential of being affected by implementing land management decisions.

The approach to defining the baseline was first to identify potential issues and concerns resulting from the proposed land management decisions. The region of influence potentially affected by these decisions is primarily the three-county area in which Jack Morrow Hills (JMH) lies (Map 1). From this information, relevant environmental and economic conditions were identified and described using geographic information systems data, existing databases and literature, previous reports and studies, field investigations, and personal and professional knowledge of the planning area.

BLM recognizes that a gap in information on public land resources exists within the JMH Coordinated Activity Plan (CAP) planning area. The environmental impact statement (EIS) interdisciplinary team examined the data and relationships used to estimate the effects of the alternatives. There is a substantial amount of credible information about the topics of this EIS; the central relationships and basic data are well established. The best available information was used to evaluate the effects of the alternatives, and studies such as the on-going elk study and vegetation inventories are included in the EIS. However, as noted in the affected environment and impact analyses of this final EIS, there is much that remains unknown about many of the plant and animal species and specific locations of cultural resources. Connectivity and habitat needs, range, migratory corridors, and other specific information for many species are unknown or uncertain. Likewise, because of the amount of public land within the JMH CAP planning area, the extent and specific locations of all cultural resources within the area are also unknown. Conducting surveys and studies to obtain all unavailable information for inclusion in this EIS would require additional time frames and incur exorbitant costs.

When encountering this gap in information, the question implicit in the Council on Environmental Quality (CEQ) regulations (40 CFR 1502.22(a)) on incomplete or unavailable information was posed: Is this information “essential to a reasoned choice among alternatives?” While additional information would often add precision to estimates, the basic data and central relationships in the JMH CAP planning area are sufficiently well established that any new information would not likely reverse or nullify relationships. Though new information would be welcome, no missing information is essential to a reasoned choice among the JMH CAP alternatives. Reasonably foreseeable actions have been analyzed, and are described in this EIS along with reasonably foreseeable effects.

3.1 LAND AND WATER RESOURCES

Land and water resources include the physical and biological features of the planning area and the land use programs that affect those features.

3.1.1 Fire

The Fire Management Implementation Plan for Bureau of Land Management (BLM) administered public lands in the State of Wyoming (USDI 1998b) guides the use and suppression of fire as a management tool in the JMH CAP planning area. The planning area lies in two geographic fire management areas: (1) the Big Sandy and Steamboat Mountain area, and (2) the Red Desert area.

Fire management planning objectives for the Big Sandy and Steamboat Mountain area are as follows: to reduce conifer and sagebrush encroachment into aspen and mountain shrub communities, improve habitat for big game and the greater sage-grouse, improve forage for livestock and wild horses, and protect public and private property by reducing hazardous fuels near BLM-administered recreation sites and range improvements. Both wildland and prescribed fires could be used to meet resource management objectives throughout the entire fire management area. Steamboat Mountain contains unique vegetative communities and high-value wildlife habitat. Wildland fire is not desired in this area, and thus suppression techniques would be implemented here.

The Red Desert fire management area includes the portion of the Red Desert Watershed Management Area located within the planning area. Fire management planning objectives for this area are as follows: to improve wildlife habitat, improve forage for livestock and wild horses, and reduce conifer encroachment into aspen and mountain shrub communities. Prescribed fire would be used to achieve resource management objectives throughout the entire fire management area.

The use of heavy equipment for fire management purposes would be restricted, and other minimal impact suppression techniques would be followed in areas of critical environmental concern (ACEC), in wilderness study areas (WSA), and along historic trails. Chemical and dye retardants for fire suppression would be restricted in the vicinity of petroglyphs within the Big Sandy and Steamboat Mountain fire management areas.

Wildland fires in the fire management areas have been infrequent. Over the past decade, less than 900 acres have burned in 29 recorded fires, with the majority occurring in the Big Sandy and Steamboat Mountain area.

3.1.2 Water Resources

Water resources include surface and groundwater sources and water quality.

3.1.2.1 Watersheds and Surface Waters

The JMH CAP planning area lies within the Great Divide Basin, Colorado-Green River, and Platte-Sweetwater River watersheds. These watersheds have been further delineated into sub-basins by the State of Wyoming, as shown on Map 61. The upper reaches of the Colorado-Green River Basin drains the western portion of the planning area and occupies the majority of the area. It contains the Pacific Creek, Jack Morrow Creek, and Killpecker Creek subwatersheds. A small portion of the Platte-Sweetwater River Basin occupies the northeast corner of the planning area. The Great Divide Basin, which occupies the southwestern corner of the planning area, is a closed basin with no hydrological connection to any major river system.

Most surface water features in the planning area are ephemeral or intermittent streams, except for a few perennial streams and wetlands. Peak flows occur in the spring and summer during storm events. Flow in ephemeral streams is directly dependent on precipitation, because the channel is above the water table at all times, whereas intermittent streams carry seasonal flow generated by water from springs or from some other surface source. Perennial streams flow continuously and are generally associated with a water table in the localities through which they flow.

Riparian areas are those areas that show vegetative and morphologic influences as a result of their proximity to water features. They are important to fish and wildlife species as well as to livestock. Riparian and wetland areas can affect the health of entire watersheds by dissipating water energy; filtering sediments; reducing stream bank erosion; increasing groundwater supplies; maintaining habitat and forage for wildlife and livestock; and providing locations for recreationists to fish, camp, and picnic.

Ecologically important wetland resources include the melt-water-fed ephemeral ponds (flockets) located in the sand dunes region of the planning area. These standing waters and their aquatic communities create an important early season resource base for the production of food organisms (invertebrates) and for nesting sites for waterfowl and other birds common to the aquatic environment.

3.1.2.2 Proper Functioning Condition

Proper Functioning Condition (PFC) is the minimum acceptable level of the ecological condition for flowing (lotic) and still (lentic) surface waters. It is a qualitative method for assessing the physical functioning of riparian and wetland areas and is a term that defines on-the-ground condition. The PFC assessment considers hydrology, vegetation, soil, and landform attributes to reduce erosion and improve water quality during high flows. PFC is a state of resiliency that would allow a riparian-wetland system to remain stable during a 25- to 30-year flow event, sustaining that system's ability to produce values related to both physical and biological attributes such as fish and wildlife habitat, forage, and erosion control.

Riparian areas that are not in PFC are either classified as functioning at risk or nonfunctional. A riparian area functioning at risk may perform some degree of riparian function but still has a high probability of degradation associated with high-flow events. Apparent trend is also determined for riparian areas functioning at risk. An upward trend indicates that although the area has limited stability, it is showing signs of becoming more stable. A downward trend indicates that the resource is showing signs of becoming increasingly unstable. In some cases the trend is not apparent. Nonfunctional riparian areas clearly lack the attributes and processes necessary to maintain stability.

BLM conducted PFC assessments in the planning area on approximately 520 acres of wetlands and 80.5 miles of riparian areas. As shown in Table 3-2, approximately 21 percent of riparian areas and 13 percent of wetland areas surveyed are in PFC, with the remaining areas functioning at risk. Approximately half of the riparian areas functioning at risk exhibit an upward trend, while the other half of riparian areas and the remaining wetland areas exhibit a downward trend and show signs of becoming increasing unstable (Tables 3-3 and 3-4).

Table 3-2. PFC Assessment

Rating	Riparian Areas		Wetland Areas	
	Miles	Percent of Total Miles	Acres	Percent of Total Acres
Proper Functioning Condition	16.5	21	66	13
Functioning at Risk	64.0	79	454	87
Nonfunctional	0.0	0	0	0
Total	**80.5**	**100**	**520**	**100**

Table 3-3. JMH Stream PFC Summary for Lotic Systems

Year Surveyed	Stream	Reach	Rating					Reach Length (in miles)
			PFC	Functioning at Risk (FAR)			NF	
				Up	N/A	Down		
1995	Jack Morrow Creek	All		X (90%)		X (10%)		20.00
1995	Rock Cabin Creek	All		X (80%)		X (20%)		16.00
1995	Pacific Creek	Segment 1	X					1.50

Year Surveyed	Stream	Reach	Rating					Reach Length (in miles)
			PFC	Functioning at Risk (FAR)			NF	
				Up	N/A	Down		
1995	Pacific Creek	Segment 2		X				1.20
1995	Pacific Creek	Segment 3				X		2.00
1995	Parnell Creek	Segment 1– upper	X					2.00
1995	Parnell Creek	Segment 2– lower				X		8.00
1995	Pacific Creek	Segment 4				X		11.00
1997	Sand Creek	All			X			1.25
1997	Dickie Springs Creek	All	X					0.50
1997	Oregon Slough Creek	All	X					1.00
1999	Robin Creek (BLM name)	All	X					1.50
1999	Oregon Buttes Creek (BLM name)	All	X					2.50
1999	Pacific Creek	Project area			X			4.00
1999	Bear Creek	All	X					7.50
2000	Nitche Creek					X		0.50
Total								**80.45**

Table 3-4. JMH Stream PFC Summary for Lentic Systems

Date of Survey	Lentic Area	Legal Description	Rating					Size of Area (acres)
			PFC	Functioning at Risk (FAR)			NF	
				Up	N/A	Down		
1997	Oregon Slough		X					60
1977	Long Slough					X		35
6/17/99	Dunder Pond (BLM name)		X					6
7/26/99	15-mile Spring				X			10
7/26/99	Ox Yoke Spring				X			2
9/7/99	Flockets (dune pond area)	Part 1				X		362
9/7/99	Flockets (dune pond area)	Part 2			X			45
Total								**520**

The waterways in PFC are primarily located in the upper reaches, where much of the stability is attributed to rocky substrates. Waterways in PFC include Dickie Springs Creek, Oregon Slough Creek, Robin Creek, Oregon Buttes Creek, Bear Creek, and portions of Pacific Creek and Parnell Creek. The waterways located in areas of lower elevation are more susceptible to degradation because of their reliance on vegetation for channel stability. Waterways that are functioning at risk include Jack Morrow

Creek, Sand Creek, Rock Cabin Creek, and the lower reaches of Pacific Creek and Parnell Creek. Channel instability results in a greater than natural loss of soil and elevated levels of sediment and salinity in the water.

3.1.2.3 Groundwater

Locally elevated areas such as Steamboat Mountain and the highly permeable Killpecker Dunes provide the right conditions for locally fed seeps and springs to occur. Groundwater overlain by impermeable rock creates confined or artesian conditions. Such confined aquifers may be accessed in different locations throughout the planning area, but the quality and quantity of the water is highly variable.

Aquifers are not well defined in the planning area because of the nature of the geologic layers. Limited information is available from development of water wells for domestic, livestock, and agricultural use, and from oil and gas development. On the Green River Basin side of the Rock Springs Uplift, a number of water wells have been known to produce or are still producing from the Tertiary, Green River Formation. On the Great Divide Basin side, groundwater data indicate usable water in the Tertiary, Wasatch Formation, and the Green River Formation. Figure 1 shows the location of these formations.

Water from the Cretaceous, Almond, and Ericson formations, at shallow depths on the Rock Springs Uplift, is usable for livestock, irrigation, and/or domestic use. Other stratigraphic units that may have usable groundwater within the planning area include the Tertiary, Bridger Formation, and the Lewis Formation where it crops out. Quaternary sand dune deposits are likely to contain usable water but more important, they may act as a recharge zone for underlying aquifers and may produce seeps and springs used by wildlife.

3.1.2.4 Water Quality

Surface water and groundwater quality in the planning area are influenced primarily by the amount of total dissolved solids (TDS) in the water. There are no known point sources of water pollution within the planning area, thus surface water quality is influenced by nonpoint sources such as soil erosion and runoff.

Most of the planning area is subject to the Colorado River Salinity Compact. The seven basin states that make up the Colorado River Salinity Control Forum take a basinwide approach for controlling salinity in the waters that naturally drain into the Colorado River. BLM provides input to the Wyoming Department of Environmental Quality (DEQ) for the review of water quality standards for salinity in the Colorado River Basin.

Pacific, Jack Morrow, and Killpecker Creeks are all subject to the Colorado River Salinity Compact and have therefore been sampled to measure levels of TDS and other constituents. Based on historic TDS concentrations and DEQ groundwater suitability standards, these waterways tend to be suitable for livestock water (<5000 ppm) and depending on flow conditions, are often within the range for agricultural water (<2000 ppm). Waterways of less than 500 ppm TDS are considered potentially suitable for domestic water. TDS is not the sole criteria for determining use suitability of a water body; however, in open areas with salty soils and few if any point sources of pollution, TDS tends to be an acceptable first approximation (Table 3-5). There are no known perennial surface flows in the Great Divide Basin.

Table 3-5. Suggested Use For Streams Within the JMH CAP Planning Area Based on Limited Historic TDS Concentrations

Stream	Suggested Use
Pacific Creek	Agricultural
Jack Morrow Creek	Livestock
Killpecker Creek	Agricultural[1]
Sweetwater River	Domestic

[1] The TDS average for Killpecker Creek is toward the high end of the agricultural range. Several samples showed TDS levels greater than 2,000 ppm. Therefore Killpecker Creek may not be an ideal agricultural water source.

In general, groundwater quality decreases away from the basin margin and with increased depth. In both the Green River and Great Divide basins, the highest-quality groundwater would be expected in Quaternary deposits of alluvium along major drainages, Quaternary dune fields, Cretaceous and Tertiary sediments along the basin margins, and in the fine-to- medium grain sandstones of the Wasatch Formation away from the basin margin.

One method of measuring groundwater quality in the area is to compare TDS levels in well-producing aquifers against the Wyoming Department of Environmental Quality guidelines for acceptable uses. Groundwater containing TDS levels below 500 milligrams per liter (mg/l) is acceptable for domestic use; TDS levels between 500 and 2,000 mg/l are acceptable for agricultural use; and TDS levels between 2,000 and 5,000 mg/l are acceptable for livestock use. Acceptable concentrations of constituents for each use category are shown in Table 3-6 at the end of Chapter 3.

Quaternary aquifers generally contain the highest-quality water, with TDS ranging from 100 to 200 mg/l in the headwaters, to 700 mg/l along the Green River. Within the planning area, it is anticipated that TDS levels would be on the high end of the range because of local influences of the Green River Formation. On the Great Divide Basin side of the Rock Springs Uplift, the shallow Tertiary aquifers (depths from less than 500 to 1,500 feet) have TDS levels ranging from 400 to 1,800 mg/l. The Wasatch Formation varies from 100 to 6,600 mg/l TDS, depending on the distance from the basin margin.

3.1.3 Wild Horses

The first wild horses in the area were most likely with the Native Americans who traveled through or inhabited southwest Wyoming. As white settlers arrived in the mid-1800s, horses often escaped or were turned loose on the open range. Many local ranchers managed these herds for their own use, introducing studs to improve the stock. Thus several different breeds can be found in the planning area, including large draft horses, quarter horse mixtures, and some American saddle horses.

With the passage of the Wild Free-Roaming Horse and Burro Act in 1971, BLM was given the responsibility to protect, manage, and control wild horses and burros. The primary objectives of the act are as follows: to manage wild horses and burros as an integral part of the natural system of public lands under the principal of multiple use; to protect wild horses and burros from unauthorized capture, branding, harassment, or death; and to provide humane care and treatment of wild horses and burros.

3.1.3.1 Herd Management Area

BLM establishes herd management areas (HMA) for the maintenance of wild horse herds. HMAs are based on the appropriate management level for the herd, the habitat requirements of the animals, the relationships with other uses of the public and adjacent private lands, and constraints to management.

The Great Divide Basin Wild Horse HMA is located 40 miles east of Rock Springs and north of Interstate 80. It encompasses an area from the boundary of the Rawlins and Rock Springs Field Offices west to the Continental Divide. The area consists of 772,915 acres, of which 73 percent is public land, 2 percent is state land, and 25 percent is private land.

Approximately 222,000 acres of the Great Divide Basin Wild Horse HMA cover the eastern one-third of the JMH CAP planning area, which is predominantly public land (Map 62). The western branch of the Continental Divide forms the western boundary of the HMA. This boundary is unfenced, and the topographic feature does not provide an effective barrier to the movement of wild horses. Wild horses are often found outside the HMA yet within the JMH CAP planning area, primarily in the Steamboat Mountain ACEC and the Rock Cabin Creek/Oregon Buttes area. These horses are by definition "excess" and are subject to annual removal.

3.1.3.2 Appropriate Management Level

BLM develops herd management plans that identify management objectives and the tasks required to meet those objectives. Objectives may include maintaining certain herd characteristics, numbers, and genetic stock. Management tasks primarily focus on monitoring both the land and the herds, removing excess animals, preparing animals for adoption, adopting animals to the general public, ensuring compliance, and performing titling. By law BLM must limit its activities to those necessary to get the job done.

In 1979 an agreement with the Rock Springs Grazing Association, the International Society for the Protection of Mustangs and Burros, and Wild Horses Yes established a total population of 1,600 wild horses for the Rock Springs District. In 1982 BLM accepted this management level, and numbers for each wild horse HMA were designated. The appropriate management level (AML) established for wild horses in the Great Divide Basin Wild Horse HMA was set at 500 horses.

Because wild horse gatherings are expensive and the law requires the minimum level of management possible, BLM allows the horse populations to fluctuate so that the number of gatherings for any one herd is minimized. BLM allows the AML for the Great Divide Basin Wild Horse HMA to fluctuate between 415 to 600 wild horses at any given time. The 2001 projected population in the Great Divide Basin Wild Horse HMA was approximately 900 horses.

BLM analyzes inventory and monitoring information to determine whether the herds are healthy and if the animals are damaging rangelands within the HMA. When monitoring data and environmental analyses indicate that the population is in excess of the AML, BLM prepares gather plans detailing the methods and timing for gather and removal. After removing the animals, BLM's main goal is to place the animals through its adoption program.

3.1.4 Livestock Grazing

Congress enacted the Taylor Grazing Act in 1934 to provide for the orderly use, improvement, and development of public rangelands. The act allows the establishment of grazing districts and the issuance of permits to graze livestock. The Public Rangelands Improvement Act of 1978 further provides for the improvement of range conditions for watershed protection, livestock grazing, wildlife habitat, and other rangeland values.

3.1.4.1 Grazing Allotments

Livestock grazing is authorized within the JMH CAP planning area in 15 allotments of various sizes, as shown on Map 63. Nine of these allotments are entirely within the JMH CAP planning area, whereas the boundaries of the other six allotments extend outside the planning area. Approximately 92 percent of the land in the allotments within JMH is public, 5 percent is state, and the remaining 3 percent is under private ownership.

Most allotments contain some lands unsuitable for livestock grazing and areas suitable only for certain classes of livestock. The unsuitable areas contained within the JMH CAP planning area are small, isolated parcels (such as steep slopes, badlands, and sand dunes) that are insignificant in size as compared to the entire planning area. Livestock grazing is authorized and occurs within WSAs in the JMH CAP planning area. The interim management guidelines for WSAs outline minimum data requirements and maximum acceptable impacts for range developments and livestock grazing increases.

An animal unit is a unit of measure for rangeland livestock equivalent to one mature cow or five sheep, all over 6 months of age. An animal unit month (AUM) is the standard measure of forage utilization. An AUM is the amount of dry forage or feed required to feed a mature beef cow, or its equivalent, for 1 month. The equivalent of a cow for forage purposes is approximately one horse or five sheep.

The total AUMs for the JMH CAP planning area are estimated based on the active permitted use by each permittee and the percent of the allotment that falls within the planning area. For discussion purposes, if half the allotment is within the JMH CAP planning area, half the AUMs are included in the total for JMH. The active permitted use within the JMH CAP planning area is approximately 26,830 AUMs, of which approximately 12 percent is sheep (3,203 AUMs) and 88 percent is cattle (23,627 AUMs). Livestock grazing within these allotments has varied over time because of available forage, environmental conditions, business decisions made by permittees, and livestock prices. Thus the historic use over the past 5 years has averaged approximately half the active permitted use totals, as shown in Table 3-7 at the end of Chapter 3.

Congress enacted a grazing fee for public lands to be established each year. The fee is based on the value of livestock, the base economic value of grazing on public rangeland established by the 1966 Western Livestock Grazing Survey, livestock production costs, and the average costs of grazing on private lands. The grazing fee for the 2002 grazing season was set at $1.43 per AUM. Surcharge rates are charged for nonpermittee grazing on public lands. Permittees may lease to other livestock operators that do not have a permit with BLM for a particular allotment. The surcharge cost for these operators for the 2002 season was set at $4.01 per AUM plus the grazing fee of $1.43 for a total of $5.44 per AUM.

BLM develops individual allotment management plans (AMP) in cooperation with the permittees. The AMPs deal with specific units of rangeland and are based on multiple use resource management objectives. The plans include terms and conditions to achieve specific resource condition objectives. The AMPs consider livestock grazing in relation to other uses of rangelands in addition to watershed, vegetation, and wildlife. An AMP establishes the seasons of use, number and class of livestock, and rangeland improvements and provides for a monitoring program to evaluate the effectiveness of management actions in achieving resource condition objectives.

3.1.4.2 Rangeland Monitoring and Improvements

The rangeland program in the planning area is based on the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management developed for BLM-administered land (Appendix 10). The program emphasizes multiple use management of forage for livestock and wild horses and incorporates needs for wildlife habitat and protection of riparian and watershed values. The specific goals and objectives of the program have been and continue to be accomplished through careful planning at the activity level, with attention given to proper placement of rangeland improvements, distribution of livestock, kind and class of livestock, season of use, suitable grazing systems, plant and animal requirements, and vegetative land treatments.

Rangeland monitoring information has been analyzed for the allotments in the planning area. Monitoring data include actual use, utilization, rangeland trend, and field observations. Such monitoring has shown that some allotments are not meeting all the standards. Furthermore, no information is available to date supporting the state water quality standard for any of the allotments. Measures have been implemented on allotments currently not meeting the standards, and progress is being made with these measures to achieve the standards. Table 3-8 shows which standards are not met or are unknown.

TABLE 3-8. RANGELAND STANDARDS NOT MET (N) OR UNKNOWN (U)

Allotment	Rangeland Standards Not Met or Unknown					
	1	2	3	4	5	6
Bar-X					U	
Bush Rim					U	
Continental Peak					U	
4th of July					U	
Pacific Creek	N	N			U	
Red Desert					U	
Sands					U	
Steamboat Mountain		N			U	
Houghton Place					U	
Crookston Ranch		N			U	
Chilton Place					U	
Johnson Place					U	
Hay Meadow		N			U	
Middle Hay Place					U	
Rock Springs		N			U	

A number of range improvement projects have been constructed both for the enhancement and protection of watershed and wildlife values and for the management of domestic livestock grazing. These projects include water developments, vegetation treatments, windmills, and fences (Map 63). Range improvement projects are authorized under cooperative agreements or permits, depending on overall benefits and objectives and private investment levels.

In some areas fences are constructed to form an “exclosure,” which serves to prevent livestock access and improve the ecological condition of such areas. Exclosures are generally constructed around fragile, degraded or historically important areas (e.g., springs, streams, historical sites). The name, purpose, and size of the 13 exclosures that currently exist within the planning area are provided in Table 3-9.

Table 3-9. Jack Morrow Hills Exclosures

Name	Purpose	Size (in acres)
Boar's Tusk	Range/Upland vegetation study	5
Crookston	Riparian enhancement, recovery, and study	6
Dunal Ponds	Riparian enhancement, recovery, and study	17
Chicken Springs	Spring source protection	8
Bush Rim	Spring source protection	8
Tri Territory	Historical site	0.1
Steamboat Spring	Spring source protection	0.2
South Pass	Historical site	12
Jack Morrow Creek	Riparian recovery, mitigation for livestock conversion (Sandy EIS)	22
Rock Cabin	Riparian recovery, mitigation for livestock conversion (Sandy EIS)	25
Pacific Creek	Riparian recovery, mitigation for livestock conversion (Sandy EIS)	275 (4 exclosures)
Lower Pacific Creek	Riparian recovery, mitigation for livestock conversion (Sandy EIS)	29
Oregon Slough	Riparian recovery, mitigation for livestock conversion (Sandy EIS)	17

3.1.5 Vegetation

The ecosystem of JMH has been assigned the highest biodiversity significance rating by the Wyoming Natural Diversity Database. This is because of the presence of the largest known occurrence of the basin big sagebrush/lemon scurfpea association in the State of Wyoming, the occurrences of several vascular plant species endemic to the intermountain Semi-Desert Province of Wyoming, and the importance of the vegetation communities as habitat for the pygmy rabbit and desert elk.

The high-elevation, cold-desert vegetation of the planning area is composed predominantly of Wyoming big sagebrush/grass and Gardner saltbush vegetation communities. Also found within the planning area are patches of mountain big sagebrush on slopes and escarpments; basin big sagebrush on sand dunes; cushion plant communities on rims above mountain shrub communities; Utah junipers on the steeper, mainly south-facing slopes; sparse patches of true mountain mahogany on sandstone outcrops; and aspen and limber pine mainly on north- and east-facing slopes of buttes and mesas. Table 3-10 provides information on the vegetation communities within the planning area.

Table 3-10. Vegetation Communities and Associated Species

Community	Association	Location	Prominent Features
Wyoming Big Sagebrush	Western Wheatgrass Bluebunch Wheatgrass	Lower parts of easterly slopes, benches, and valley bottoms. Exposed sites on southerly or westerly slopes, upper parts of easterly slopes.	Dominant vegetation community in planning area.
Gardner's Saltbush–Winterfat	None	Alkaline soils of benches, flats, and gentle slopes.	Second most abundant in planning area; large-fruited bladderpod (BLM sensitive species) occupies habitat within this community.
Mountain Shrub Communities			
Basin Big Sagebrush	Basin Wildrye Lemon Scurfpea Western Wheatgrass	Southeast-facing escarpments and valley bottoms on terraces above floodplains. Southwest of Steamboat Rim and south of Essex Mountain. Mesa east of Alkali Draw on northwest-facing slope and near Essex Mountain.	Basin big sagebrush/lemon scurfpea is a unique association rarely found anywhere else in the Western United States. Important for cover and crucial habitat for elk.
Mountain Big Sagebrush	Utah Snowberry/Basin Wildrye Bluebunch Wheatgrass	Slopes steeper than 10 percent on northerly and south-southeasterly aspects. Northeast face of Pacific Butte.	Aspen seedlings, which provide cover and crucial habitat for elk, grow around the edges of this shrub stand.
True Mountain Mahogany/ Bluebunch Wheatgrass	None	Steep slopes on or near sandstone outcrops.	Sparse, small stands throughout the planning area, which are browsed by elk and deer.
Utah Juniper/Bluebunch Wheatgrass	None	East- and south-facing slopes and outcrops.	Sparse, small stands throughout the planning area, which contain an understory with rich species diversity, but sparse vegetation.

3.1.5.1 Rare Plant Communities and Associations

There are two rare plant communities (cushion plant and woodlands) and one rare plant association (basin big sagebrush/lemon scurfpea) within the planning area (Map 15).

3.1.5.1.1 Cushion Plant Community

Cushion plant communities are areas with low-growing, matlike tufts of vegetation with bare soil and gravel between the individual plants. These areas occur on ridgetops that experience extreme weather conditions. Cold winters, little rainfall, and strong winds contribute to the development of these specialized communities. The communities are very vulnerable to surface disturbance and have a slow recovery time. Usually 50 years or more are needed to restore the communities to their original native state after disturbance. The cushion plant community contains uncommon and regional endemic plant species. Typical associates found in these areas include different species of phlox, twinpods, bladderpods, and many legume species. The communities are prime habitat for the mountain plover, a BLM sensitive species, which uses the low-growing vegetation areas for nesting.

3.1.5.1.2 Woodlands Community

Tree species are a very minor component of the vegetation in the planning area. In addition to the Utah juniper community, small isolated stands of limber pine and aspen occur at the higher elevations of Oregon Buttes and Steamboat Mountain. The presence of these stands is attributable to snow accumulation and to the location of springs and seeps on the slopes of the buttes. In addition, sparse patches of Douglas fir and lodgepole pine occur on Oregon Buttes.

The woodlands community provides cover and calving habitat for big game species in the planning area.

3.1.5.1.3 Basin Big Sagebrush/Lemon Scurfpea Association

The basin big sagebrush/lemon scurfpea community is a unique assemblage found on stabilized sand dunes. This is the largest of the few known occurrences of this association. Most locations are within the JMH CAP planning area, and the association is not known elsewhere in Wyoming. The association is only rarely found in small patches elsewhere in the Western United States.

This vegetation type provides crucial calving habitat and cover for the desert elk herd, and important habitat for the pygmy rabbit, a BLM Wyoming sensitive species. The Wyoming Natural Diversity Database (WYNDD) considers this area to be a unique habitat deserving protection from unnecessary disturbances. WYNDD also recommends that the boundary of the Steamboat Mountain ACEC be adjusted to include the unprotected part of the occurrence.

3.1.5.2 Special Status Plant Species

Special status plants are those species that are federally listed as threatened or endangered (T&E), proposed for listing, or candidates for listing under the Endangered Species Act (ESA). They also include species designated by each BLM State Director as sensitive and those listed or proposed for listing by a state in a category implying potential endangerment or extinction. BLM is mandated to protect and manage threatened, endangered, candidate, proposed, and sensitive plant species and their habitat. BLM is also required to protect and manage sensitive species jointly identified with the appropriate state agency. The State of Wyoming does not have an official list of sensitive, threatened, or endangered plant species.

A significant amount of information on the vegetation and plant associations of the JMH CAP planning area has been accumulated by BLM to date. General floristic inventories were conducted in the Continental Divide region, and a specific survey of plant communities and species of special concern was performed in the planning area in 1994 and 1995.

3.1.5.2.1 Federal Threatened and Endangered Species

Two plant species federally listed under the ESA have the potential to occur within the planning area. The blowout penstemon (*Penstemon haydenii*) is listed as endangered, and the Ute ladies'-tresses (*Spiranthes diluvialis*) is listed as threatened. These species are described further in the Biological Assessment (Appendix 3). No proposed or candidate plant species have the potential to occur in the planning area.

The blowout penstemon occurs in the Sand Hills of central Nebraska and a recently discovered location in south-central Wyoming in the Ferris Mountains. Potential high-elevation sand dune habitat in the Killpecker Dunes in the planning area was surveyed in 2000, but no new population of the blowout penstemon was documented.

The Ute ladies'-tresses is known to occur near the base of the eastern slope of the Rocky Mountains in southeastern and central Wyoming. Although BLM-authorized searches for the species have been performed at several locations along the Green River and its tributaries (including Pacific Creek), the species has not been found in southwest Wyoming. Potential suitable habitat in the planning area may be found on Jack Morrow Creek and its tributaries, Pacific Creek, the meadows at Crookston Ranch (located on Nitchie Creek), Sweetwater River and its tributaries, sand dune ponds (flockets), and the perennial and intermittent streams in the Red Desert area.

3.1.5.2.2 Wyoming BLM Sensitive Plant Species

Instruction Memorandum (IM) No. WY-2001-040 lists the Wyoming BLM sensitive species and management policy. The policy emphasizes planning, management, and monitoring of sensitive species and directs management of these species to avoid or minimize adverse impacts. It is not the intent of the policy to create severe restrictions on activities such that other multiple use activities cannot occur. The policy goals of this instruction memorandum are to—

- Maintain vulnerable species and habitat components in functional BLM ecosystems
- Ensure sensitive species are considered in land management decisions
- Prevent the need for species listing under the ESA
- Prioritize needed conservation work with an emphasis on habitat.

Table 3-11 lists the Wyoming BLM sensitive species that grow in the planning area (Map 15). The Nature Conservancy ranks the meadow pussytoes (*Antennaria arcuata*), Nelson's milkvetch (*Astragalus nelsonianus*), and large-fruited bladderpod (*Lesquerella macrocarpa*) as very vulnerable to extirpation both globally and statewide.

Table 3-11. Wyoming BLM Sensitive Plant Species

Common Name	Scientific Name	Habitat
Meadow pussytoes	*Antennaria arcuata*	Moist, hummocky meadows, seeps, or springs surrounded by sage/grasslands
Nelson's milkvetch	*Astragalus nelsonianus*	Alkaline clay flats, shale bluffs and gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, and cushion plant communities
Large-fruited bladderpod	*Lesquerella macrocarpa*	Gypsum-clay hills and benches, clay flats, and barren hills

Source: BLM (Wyoming) Sensitive Species Policy and List, IM No. WY-2001-040, April 9, 2001.

Meadow pussytoes has been found in 20 sites in Fremont County, with two populations consisting of approximately 5 acres located within the planning area. One of the 20 populations is known to extend into the Rock Springs Field Office management area at Long Slough, near South Pass City. Trend data for the State of Wyoming show the population to be stable to slightly declining since 1982. However, a status survey of meadow pussytoes conducted for BLM in 1995 discovered a single new population in the Oregon Gulch drainage, approximately 4 miles west of Continental Peak (Fertig 1996a). Surveys in other areas of potential habitat along Dickie Springs, Alkali Creek, and West Pacific Creek did not locate any plant populations.

Nelson's milkvetch is regionally endemic to southwest and central Wyoming. Its distribution includes the Wind River, Green River, Washakie, southern Powder River, Great Divide Basins, Owl Creek Mountains, and the Rock Springs Uplift in Fremont, Natrona, and Sweetwater Counties. The population size of Nelson's milkvetch is not known and trend data are not available; however, it is presumed that populations are stable at present (Fertig and Beauvais 1999).

The large-fruited bladderpod was thought to be endemic to the northern Great Divide Basin in Sweetwater and Fremont Counties; however, it was located in Lincoln County during a vegetation survey in 1992 (Culwell 1992). Most of the known populations occur on public land northeast of Steamboat Mountain on Bush Rim, near Continental Peak, and in the Oregon Buttes area. Large-fruited bladderpod population sizes fluctuate from year to year, apparently in response to moisture availability. The species is much more vulnerable to impacts during dry years when populations are small.

3.1.5.3 Species of Concern

The Wyoming Natural Diversity Database lists other species of concern that occur within the planning area (Appendix 11). These species lack formal federal or state status or protection but are potentially threatened within the ecosystem. They include annuals and biennials that have fluctuating population sizes in response to favorably moist years. Several rare species of the JMH have small global ranges but are often locally abundant within areas of suitable habitat. Such species require little or no formal protection as long as areas of representative habitat are maintained in good condition.

3.1.5.4 Noxious and Invasive Weeds

Federal agencies are directed by Executive Order (E.O.) 13112, Invasive Species, to expand and coordinate efforts to prevent the introduction and spread of invasive plant species (noxious weeds) and to minimize the economic, ecological, and human health impacts that invasive species cause. Weed management is an integral part of maintaining ecosystem health.

Fremont, Sublette, and Sweetwater Counties have official lists of noxious and invasive weeds that occur within county limits. Those species that are known to occur within the planning area are listed in Table 3-12. Most of the weeds are found along County Road 21 (Tri-Territory Road) and County Road 74 (Oregon Buttes Road).

Table 3-12. Noxious and Invasive Weeds

Common Name	Scientific Name	Location	Other Characteristics
Halogeton	*Halogeton glomeratus*	Roadsides, borrow ditches, disturbed areas	Decreases if native grasses and shrubs are allowed to recolonize; moderately toxic to livestock.
Kochia	*Kochia scoparia*	Roadsides, borrow ditches, disturbed areas	Decreases if native grasses and shrubs are allowed to recolonize; moderately toxic to livestock.
Russian Thistle	*Salsola kali*	Roadsides, borrow ditches, disturbed areas	Decreases if native grasses and shrubs are allowed to recolonize; moderately toxic to livestock
Perennial Pepperweed	*Lepidium latifolium*	Stream banks on lower portions of Jack Morrow Creek/Pacific Creek	Causes loss of native grass communities in riparian areas.
Black Henbane	*Hyoscyamus niger*	Tri-territory road, north and south Table Mountain, sand dunes, Bar X Ranch road, disturbed locations of Pacific Creek and Rock Cabin Creek	Causes occasional livestock poisoning and is poisonous to humans
Whitetop	*Cardaria spp.*	Disturbed alkaline soils of sagebrush-grass or riparian communities	Highly competitive with native species once established
Musk Thistle	*Carduus nutans*	Rock Cabin Creek, Chicken Springs, Dickie Springs, seep areas on east side of Steamboat Mountain	Aggressive invader which forms dense stands to crowd out desirable species
Canada Thistle	*Cirsium arvense*	Rock Cabin Creek, Chicken Springs, Dickie Springs, seep areas on east side of Steamboat Mountain	Aggressive invader which forms dense stands to crowd out desirable species
Leafy Spurge	*Euphorbia esula*	West of Pinnacles	Aggressively out competes native rangeland species

Weed populations are generally found along main dirt roads and two-tracks (especially those that cross meadows and drainage bottoms), in areas of livestock concentration (stock reservoirs, riparian areas, and sheep camps), and in areas of intense recreational use (frequently used dispersed camping areas). Motorized vehicles transporting seeds in tire treads are a significant source of new infestations of weed species. Other ways weed species are spread include untimely road blading (spreading mature weed seeds along road banks), transportation of nonlocal livestock into the area, use of contaminated hay for stock animals, and overuse and damage of native plant communities.

3.1.6 Wildlife

There are a variety of wildlife habitats supporting more than 350 different species within the planning area, from sand dunes and dunal ponds in the western portion of the planning area to small woodlands in the higher elevations of Oregon Buttes and Steamboat Mountain. The term "wildlife" refers collectively to mammals, birds, fish, amphibians, and reptiles.

BLM manages wildlife habitat on public lands, while the Wyoming Game and Fish Department (WGFD) manages the wildlife populations. BLM and WGFD have officially coordinated their management activities since 1976. An "umbrella" Memorandum of Understanding (MOU) adopted in March 1990 (replacing a previous MOU from August 1976) is the basis for all cooperative efforts between BLM and WGFD. The MOU directs each agency to conduct a coordinated program of wildlife resource administration, participate in each other's planning efforts, advocate a wildlife management strategy that focuses on total ecosystem management, maintain a cooperative-based wildlife information gathering and exchange system, provide consideration for management or mitigation of wildlife resources in other BLM programs, and promote improved public understanding of wildlife management on public lands (BLM and WGFD 1990).

3.1.6.1 Mammals

The WGFD manages big game populations in herd units. Herd unit boundaries generally do not match BLM field office boundaries, making analysis and correlation of resource data and big game population data difficult. The WGFD revises its population objectives for each big game species based on new habitat information, population trends, recreation demand, and public input.

Table 3-13 details the big game species within the planning area, habitat use by big game, acreage of crucial habitat and birthing areas within the planning area, WGFD herd units and size, and population levels set by WGFD for each herd unit.

Table 3-13. Big Game Habitat Use and Size

Common and Scientific Name	Habitat Use in Planning Area (acres)	WGFD Herd Unit and Size (million acres)	WGFD Herd Unit in Planning Area (acres)	WGFD Population Objective[1]
Mule Deer (*Odocoileus hemionus*)	Crucial winter range = 132,900 Parturition = 36,300	Steamboat = 2.6 South Wind River Deer = 1.4	Steamboat = 563,256 South Wind River Deer = 59,074	Steamboat = 4,000 South Wind River Deer = 13,000
Rocky Mountain Elk (*Cervus elaphus*)	Crucial winter range = 194,900 Parturition= 91,500	Steamboat = 2.6	Steamboat = 622,330	Steamboat[2] = 1,200
Pronghorn Antelope (*Antilocapra Americana*)	Crucial winter range = 81,500	Red Desert = 2.2 Sublette = 6.7	Red Desert = 79,700 Sublette = 542,630	Sublette = 48,000 Red Desert = 15,000
Moose (*Alces alces*)	Migrant	Lander = 2.7	Lander = 55,100	Lander = 450

[1] Population objectives are for entire herd unit area.
[2] Herd objective was reevaluated and changed from 500 in 2002.

Crucial habitat (winter range) for mule deer, elk, and antelope covers approximately 40 percent of the JMH CAP planning area. Crucial habitat is generally the component of a species habitat that has been documented as the determining factor in a population's ability to maintain itself at a certain level over the long term. The elk and mule deer winter range overlaps primarily in the south-central part of the planning area, whereas the antelope winter range is in the western portion. Birthing areas for mule deer and elk are also located in the planning area, with most of the birthing areas overlapping with the winter range (Map 51).

An area of big game habitat, the connectivity area, was established for the original JMH CAP draft EIS effort in 2000 to maintain habitat connectivity between important habitats within the planning area. The connectivity area (Map 51) is a key wildlife habitat area that connects and includes important big game habitats. The area includes topographic relief for escape cover, important year-round forage, crucial winter range, and birthing areas for a majority of the deer and elk populations. The area also allows for free movement of animals among the various habitat components and provides an important migratory corridor throughout the year. Maintaining the integrity of the area is considered paramount to sustaining viable big game herds and other wildlife populations. Elk populations are currently above objective because of the current lack of development within the planning area and the lack of vehicular access to sensitive habitats during essential times of the year.

Water is a large factor in influencing big game distribution. Most mule deer activity within the planning area is dependent on its availability. Studies have shown that in arid regions during the driest months, mule deer seldom move more than 1 to 1.5 miles from water. Lack of surface water in some areas also influences migration of pronghorn antelope and their season of use on particular ranges.

3.1.6.1.1 Mule Deer

Mule deer population levels are currently below objective for both herd units within the planning area. Herds declined dramatically in the early 1990s following a series of drought years and a harsher than normal winter in 1992. Since 1993 populations have been gradually increasing. The 2002 WGFD population estimate for the Steamboat mule deer herd was 3,100. Fawn production has been lower than normal and mortality normal to slightly higher than normal because of the drought over the past 3 years and the colder than normal winters of 2000–2001 and 2001–2002. The 2001 WGFD population estimate for the South Wind River herd was 9,600 (WGFD 2003).

Winter range is a limiting factor for deer populations over much of their habitat, because shrubs, which make up approximately 75 percent of the winter diet, are covered by snow in many areas. Drought conditions and competition with elk for preferred birthing areas may also be affecting the overall population and mule deer fawning success.

3.1.6.1.2 Pronghorn Antelope

Pronghorn antelope populations of the herd units in the planning area are currently below objective. During the early 1990s, harvests of does and fawns were increased to regulate the increasing population, but the severe winter of 1992–93 and associated mortalities led to a significant reduction of doe and fawn harvest from 1994 to the present (USDI 199b).

WGFD estimates the 2002 population for the Sublette herd is at about 44,700, which is 7 percent below the objective of 48,000. For the past 3 years, drought conditions have led to lower reproduction and somewhat higher winter mortality. Fawn production in the Red Desert herd has been low for at least 10 years. WGFD herd models indicate the herd was still below objective size in 2002, even with reduced sales of doe/fawn licenses, but should be near objective in 2003 with average fawn production (WGFD 2003b).

Weather and availability of crucial winter range can be an important factor affecting population levels. Severe winters with deep, crusted snow and below-zero temperatures cause high antelope mortalities, and fences affect antelope movement with direct and indirect effects to mortality. Antelope habitat is generally represented by water and low-growth (2 to 3 feet) sagebrush in combination with rabbitbrush and bitterbrush.

3.1.6.1.3 Rocky Mountain Elk

The Steamboat elk herd is a unique component of the wildlife resources in the southwestern part of Wyoming. This elk herd exists in the sagebrush desert ecosystem, which contains very little conifer or aspen cover.

Historically, elk migrated to the planning area from Jackson, Wyoming, and Yellowstone National Park, with the last major migration occurring in 1913. Records indicate that this movement was so large that portions of the area were proposed as a winter elk refuge. Historical information shows a remnant population of elk lived within the planning area until around 1940. Transplants to reestablish elk began in 1944 and continued until around 1967. These transplant efforts failed to restore the migration but did establish a resident elk herd.

Elk population estimates for the Steamboat herd unit area have varied over time. A population objective of 500 was first established in the early 1970s, then increased to 700 in 1977, then lowered to 500 in 1984. Current estimated population counts show that the herd is approximately at 1,600 elk (WGFD 2003). The WGFD reevaluated the herd objective for the Steamboat herd unit area in 2002 and increased it from 500 to 1,200 to better fit the increased herd unit area.

Most research on elk habitat utilization has been conducted in forested habitat because of limited elk populations in sagebrush-steppe habitats. It is known that elk habitat selection patterns are strongly influenced by security and thermal needs (Irwin and Peek 1979; Thomas et al. 1979), and therefore that disturbance may be a larger issue in an open environment than in a forested environment. In forested habitats, cover is provided by timber stands with vegetation types such as aspen (*Populus tremuloides*) and conifer species. This type of vegetation is severely limited within the JMH CAP planning area; therefore, the elk use scattered stands of tall sagebrush (*Artemsia tridentata*), aspen, and limber pine (*Pinus flexilus*), in addition to topography, for cover. This limited amount of cover seems sufficient for the elk as long as the level of human disturbance is low.

Approximately 175,000 acres within the planning area are classified as crucial habitat (winter range), and 91,500 acres are classified as elk birthing (calving) areas. Most of the birthing areas overlap with the winter range. Approximately 67 percent of the winter range and 86 percent of the birthing areas for the Steamboat elk herd unit are in the JMH CAP planning area.

An elk study within the JMH CAP planning area (Powell 2003), initiated in 1999, was conducted through the Wyoming Cooperative Research Unit, with funding from BLM, the Rocky Mountain Elk Foundation, and the WGFD. The objectives of the study were to document habitat use patterns of elk within the JMH CAP planning area and determine how the elk responded to human activities (Powell 2003). The study was a 3-year effort whose results include the following:

- Elk selected habitats offering security cover (tall sage and mountain shrub) during calving and summer seasons, and generally avoided habitats offering little security cover (dune, badlands, sage/grass).
- During winter and spring, elk used dune habitats less than expected and all others in proportion to their availability.
- During the fall, elk selected against sage/grass habitats and used all others in proportion to their availability.
- Elk in proportion to their availability throughout the year used aspen, mountain mahogany, riparian, and short grass habitat types.
- During summer, elk avoided areas within 2 kilometers (km) of active gas/oil wells, showed no preference for areas within 2 to 3 km of active gas/oil wells, and selected areas between 3 and 5 km from active gas/oil wells
- Elk avoided areas within 2 km of major roads and used areas 4 to 5 km from major roads more than expected.
- During the summer, areas within 2 km of wells and major roads received 73 percent less use than was expected.

- Vegetation composition of habitats did not differ among 500-meter bands adjacent to roads or wells.
- Forty-three percent of all locations within roadless areas occurred during the 2-month fall hunting season.
- Annually, 26.5 percent of all elk locations were in nonvisible areas. During the summer and winter, 31.1 percent and 21.5 percent respectively of elk locations were located in nonvisible areas.
- Daily movements of treatment elk (1 day after disturbance) were significantly greater than those of control elk and treatment elk for all days before and after being disturbed.
- Significantly fewer pellet groups were counted in disturbed calving areas than areas not disturbed (i.e., control areas).

Overall, the study concluded that elk typically avoided habitats offering little security cover; topography and screening cover by vegetation are important during daylight hours for providing security cover; habitat use patterns within the planning area are strongly influenced by roads making the habitat loss more than that of the actual road "footprint"; human disturbance led to increased daily movements of disturbed elk and reduced elk use in traditional calving areas; and although disturbed elk moved greater distances, they apparently did not move to areas that were poorer in terms of security or habitat quality.

To further understand elk behavior, BLM has initiated a new elk study. Twenty-nine female elk have been equipped with global positioning system collars, enabling monitoring of a representative sample of the Steamboat elk herd. The goal of the study is to determine how the elk are affected by development and various types of human disturbance, and at what threshold they abandon an area. This study is contracted out through the University of Wyoming Fish and Wildlife Cooperative Studies Unit and is in partnership with WGFD. The information derived from the study will be used to facilitate the implementation, monitoring, and evaluation management strategy (Appendix 17) recommended in the JMH CAP.

3.1.6.1.4 Other Mammals

Mountain lions have been observed in the Steamboat Mountain and Oregon Buttes areas; however, indications show that their distribution and abundance in the planning area is very limited. Although black bear and gray wolves have been observed in the planning area, such sightings are rare and likely involve migrating or displaced animals. Other mammals that may be present in the planning area include moose (*Alces alces*), coyote (*Canis latrans*), white-tailed jackrabbit (*Lepus townsendi*), mountain cottontail rabbit (*Sylvilagus nuttalli*), pygmy rabbit (*Brachylagus idahoensi*), porcupine (*Erethizon dorsatum*), raccoon (*Procyon lotor*), red fox (*Vulpes fulva*), swift fox (*Vulpes velox*), beaver (*Castor canadensis*), striped skunk (*Mephitis mephitis*), white-tailed prairie dog (*Cynomys leucurus*), various rodents, bats, and weasel (*Mustela spp.*).

3.1.6.2 Birds

Avian species in the JMH CAP planning area include waterfowl, upland game birds, raptors, shorebirds, and neotropical migrants.

3.1.6.2.1 Waterfowl

Most of the planning area lies within the Pacific Flyway, with a very small portion occurring within the Central Flyway. Most waterfowl located in the planning area are migratory, short-term occupants because of the lack of available open water and riparian cover. Nesting in the Pacific Flyway occurs below 8,500 feet and is dependent on cover in riparian areas. Nesting occurs within the planning area on the dunal ponds and in Pacific Creek and Oregon Slough areas.

Waterfowl use every form of available open water in the planning area, from flowing wells and stock ponds to playa lakes and potholes. Northern shoveler (*Anas clypeata*), gadwalls (*Anas strepera*), mallards (*Anas platyrhynchos*), pintails (*Anas acuta*) and teal (*Anas spp.*) are the most common summer resident species. Some species only migrate through the area on their way to breeding or nesting grounds farther north or to winter areas farther south. Other species, such as the Barrow's goldeneye (*Bucephala islandica*), are resident for only part of the year, wintering in western Wyoming.

3.1.6.2.2 Greater Sage-Grouse

Greater sage-grouse (*Centrocercus urophasianus*) are found throughout the planning area wherever suitable habitat exists. Greater sage-grouse were historically found in all 23 Wyoming counties, and it was commonly agreed that Wyoming sagebrush habitats supported more greater sage-grouse than any other state, particularly within the upper Green River Basin (Patterson 1952). However, since the early 1950s when R. L. Patterson conducted the first comprehensive greater sage-grouse research project in Wyoming within the Eden Valley and Dry Sandy-Pacific Creek areas, greater sage-grouse populations have been declining. Data collected in 2003 by the WGFD compared to data collected by Patterson (1952) from sage-grouse leks surveys in the planning area have shown a 70 percent decline in the numbers of males attending leks since 1952. If information from the adjacent private lands is included, the decline reaches 90 percent. Although no single or combination of causes have been proven, the decline in greater sage-grouse populations is thought to be attributed to a multitude of factors which include, but are not limited to: drought; oil and gas wells and their associated infrastructure; powerlines; mammalian and avian predators; and a decline in the quantity and quality of sagebrush habitat resulting from livestock grazing, range management treatments, and development activities (Connelly et al. 2000).

With current levels of greater sage-grouse population declines, six petitions to list the greater sage-grouse under the ESA have been submitted to the U.S. Fish and Wildlife Service (USFWS). Across the West, various state and federal agencies have stepped up monitoring and research efforts in an attempt to prevent the listing of the species. The Director of the BLM has issued a draft national BLM Sage-Grouse Habitat Conservation Strategy to address concerns over population declines. The primary purpose of the BLM strategy is to focus attention, resources, and actions on reducing potential threats to greater sage-grouse on BLM-administered public land. The BLM strategy will identify key actions to be taken at a national level to minimize or eliminate threats to greater sage-grouse, set time frames and identify the appropriate BLM offices responsible for implementation of the strategy, and task BLM State Directors to development and implement state-level greater sage-grouse habitat conservation strategies tiered to the national-level strategy. The final national BLM Sage-Grouse Habitat Conservation Strategy is scheduled to be out in 2004.

In June 2003 the Wyoming Game and Fish Commission approved the Wyoming Greater Sage-Grouse Conservation Plan. This plan was drafted by an inter-disciplinary team of 18 Wyoming residents. The plan provides an overview of issues affecting the greater sage-grouse in Wyoming and provides management recommendations to address those issues.

The State of Wyoming has also taken steps to address potential effects of hunting on greater sage-grouse populations. In an effort to reduce hunting pressure on productive hens and reduce overall harvest, the WGFD has shifted the opening day of greater sage-grouse season multiple times over the past 9 years. In 2000, the WGFD closed the Snake River drainage in western Wyoming and portions of southeast Wyoming in Platte, Goshen, Laramie, and southern Albany County to protect remnant greater sage-grouse populations on the periphery of the natural range. In 2002 and 2003, the WGFD reduced the length of the season from 16 days to 9 days, reduced the daily bag limit from three to two, and reduced the possession limit from six to four birds (WGFD 2003a).

The southwestern portion of Wyoming is considered well suited for greater sage-grouse because of the nature of the physical environment. The physiography of the Green River Basin has influenced the development and the daily and seasonal activity patterns of greater sage-grouse. In general, greater sage-grouse move to the foothills, riparian areas, or irrigated hay fields during the spring and summer and to dryer upland sites during the fall and winter. These seasonal movements have developed primarily as a result of the wide variation in the nature, amount, and distribution of water, and the availability of sagebrush for nutritional and shelter requirements. The physical characteristics of sagebrush vary, providing the essential elements of greater sage-grouse habitat. Sagebrush ranges from a low, prostrate shrub a few inches in height found on dry, rocky sites to a bushy tree-like plant found on moist, sandy soils along watercourses.

The reproductive characteristics and habits of greater sage-grouse significantly limit their adaptability to human disturbance and habitat alteration. Birds can return to historic “strutting grounds” or breeding complexes as early as February. Strutting grounds, referred to as “leks,” may be located at a point intermediate between the winter range and summer range or, in some cases, the summer and winter range may be the same area (Map 17). Leks are usually small open areas from 0.1 acre to 10 acres in size, but they may be as large as 100 acres or more. Snow conditions play a part in the suitability of an area for strutting, as does the amount of vegetation. The lek is generally in an area supported by low, sparse vegetation or in open areas surrounded by sagebrush, which provides escape, feeding, and cover (Connelly et al., 2000). The sparse vegetation around lek locations allows the opportunity for males to be seen by hens from further distances. Peak breeding season is early to mid-April. Birds are active in courtship displays during early morning darkness until sunrise. On overcast or foggy days, strutting grounds may remain active until midmorning. Strutting can take place all night during full moon periods.

Recent radiotelemetry data gathered by Rocky Mountain Energy biologists show that some grouse move up to 11 miles to nest, while most range 1 to 4 miles. Studies conducted by the University of Wyoming Cooperative Research Unit have consistently shown that the most successful nests are located beyond 2 miles (Anderson 1999). Nesting site selection is critical for successful reproduction. The availability of tall, dense grass cover combined with tall shrubs at nest sites decreases the likelihood of nest depredation (Heath et al. 1997). Results from Lyon 2000 demonstrated that hens have strong fidelity to nesting areas. Although none of the hens observed nested under the same sagebrush bush, the average distance between consecutive years’ nests was 683 meters (2,240 feet). It is believed that fidelity to nesting areas may serve to increase fitness by reducing the risks associated with the uncertainty of unfamiliar nesting habitat (Heath et al. 1997).

Lek, nesting, and early brood-rearing habitat within the planning area for greater sage-grouse was delineated by BLM, in coordination with the WGFD, using the best available habitat data for the planning area including new locations, historical locations of leks, and vegetation characteristics derived from enhanced satellite images and professional knowledge of the area. This effort constituted an initial evaluation of potential habitat. Additional habitat evaluations will occur as part of the implementation, monitoring, and evaluation management strategy (Appendix 17) using suitable habitat characteristics as defined in Table 3-14. Delineation of this habitat was also part of a greater effort by the WGFD to delineate sage-grouse habitats throughout the state. BLM is also evaluating new information received from WGFD and will incorporate it into the implementation, monitoring, and evaluation management strategy.

Table 3-14. Characteristics of Sagebrush Rangeland Needed for Productive High Quality Greater Sage-Grouse Habitat in Wyoming

Greater Sage-Grouse Habitat (Period of Use)	Sagebrush[a]		Perennial Grass/Forb		Residual Grass Cover		Area[f]
	Height (in.)	Canopy Cover (%)[b]	Height (in.)	Canopy Cover (%)	Height (in.)	Canopy Cover (%)	
Leks/Breeding (March–May)	Typically an open area surrounded by potential nesting habitat. A common feature is less shrub and herbaceous cover than surround habitats.						
Nesting/Early Brood-Rearing Habitat (March–July)	12–32	15–25	>7[c]	>13[d]	4–5	>3[e]	>80%
Late Brood-Rearing Habitat (July–October)	12–32	10–25	Variable (4" min.)	>13	N/A	N/A	>40%
Winter Habitat (November–March)	10–14	10–30	N/A	N/A	N/A	N/A	>80%

[a] Live plants

[b] Canopy coverage for sagebrush is defined as the percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of the plant. Small openings in the canopy are included.

[c] Measured as "droop height" of leaves; the highest naturally growing portion of the plant.

[d] Cover should be composed of approximately 60% perennial grasses and 40% for forbs; percentage of canopy cover should be substantially higher if most sagebrush has growth that provides little lateral cover (Schroeder 1995). Mesic sagebrush site herbaceous cover should exceed 15% for perennial grasses and 10% for forbs.

[e] Residual perennial grass canopy cover should equal or exceed 3% of the total vegetative cover.

[f] Percent of seasonal habitat for greater sage-grouse population needed with indicated conditions.

Sources: Connelly et al. 2000; Holloran 1999; Lyon 2000; Heath et al. 1997.

While greater sage-grouse generally return to traditional wintering areas before heavy snowfall, suitable winter habitats require sagebrush 10–14 inches above snow level with canopy covers that range from 10 to 30 percent. Winter foraging areas tend to be gentle southwest facing slopes and windswept ridges, and roosting takes place in open, low sagebrush sites on clear, calm nights, and in taller shrubs with greater canopy cover during windy periods or during snowstorms. Greater sage-grouse will fly considerable distances (>5 miles) and elevations (>1,000 feet) between winter feeding sites and suitable snow roosting sites and burrow in deep powdery snow to conserve energy. During severe winters, the amount of suitable available winter habitat is greatly reduced. Severe winter habitat may or may not be considered crucial habitat. Some severe winter habitat may be essential and used to a great extent during severe winters, while others may only be used occasionally (WGFD 2003). Wintering grounds are potentially the most limiting seasonal habitat for greater sage-grouse (Lyon 2000).

In February 2002, the Rock Springs BLM conducted aerial surveys (by helicopter) north of Rock Springs to obtain needed information on greater sage-grouse wintering areas. The survey area was chosen based on professional knowledge of BLM and WGFD biologists and information from previous studies such as Patterson (1952). Approximately 3,000 square miles were flown at low altitudes in a grid pattern to determine areas of winter use by greater sage-grouse. Approximately 2,758 birds were located.

As a result of these surveys BLM, in coordination with the WGFD, delineated winter range for greater sage-grouse (Map 17). Winter range designation was based on new aerial locations, historical locations of wintering greater sage-grouse, and vegetation characteristics derived from enhanced satellite images and professional knowledge of the area. For winter habitat characteristics, see Table 3-14.

3.1.6.2.3 Raptors

There are 20 different species of hawks, eagles, and owls that are nesting, assumed to be nesting, or that have the potential of nesting in the planning area (Map 17). Other species are wintering populations, migrants, or possible migrants. Approximately 70 percent of the planning area has been surveyed for nesting raptors. In 1979, about 40 percent of the planning area was surveyed for "special habitat features," with most potential cliff-nesting habitat identified. A raptor inventory was conducted from 1980 to 1981 by BLM biologists and survey crews to satisfy coal leasing suitability criteria. Raptor surveys are currently driven by specific development projects, and data are collected to determine raptor management conflicts. Raptor species commonly seen in the planning area and their respective habitats are shown in Table 3-15.

Table 3-15. Raptor Species

Common Name	Scientific Name	Habitat
Prairie falcon	*Falco mexicanus*	Low rock outcroppings to tall vertical cliffs (Rock Springs Uplift, Steamboat Mountain)
American kestrel	*Falco sparverius*	Dead snags, clay streambanks, rimrock
Ferruginous hawk	*Buteo regalis*	Low cliffs, buttes, tresses, on the ground, artificial nesting platforms, sheepherder monuments
Red-tailed hawk	*Buteo jamaicensis*	Riparian zones and timbered areas
Swainson's hawk	*Buteo swainsoni*	Dry plains, open foothills, open forest, sparse trees, river bottoms
Northern harrier	*Circus cyaneus*	Wetlands and open fields
Burrowing owl	*Athene cunicularia*	Grasslands and mountain parks near prairie dog towns and steppes, deserts, and prairies
Raven	*Corvus corax*	Mountains and deserts
Golden eagle	*Aquila chrysaetos*	Cliffs, ledges, pinnacles
Great-horned owl	*Bubo virginianus*	Cliff holes, rock crevices, trees

3.1.6.3 Aquatic Species

Aquatic wildlife in the planning area is found primarily in the waterways that cross through the area. Coldwater game fish exist in some portions of the waterways except Jack Morrow Creek, which contains only nongame species. Amphibian species such as the Great Basin spadefoot toad (*Spea intermontana*), spotted frog (*Rana pretiosa*), and tiger salamander (*Ambystoma tigrinum*) are located within ponds, spring seeps, and permanent and temporary waters within the planning area. Ponds or lentic habitats, locally referred to as the dunal ponds or flockets, are found in the sand dunes region of the planning area. Table 3-16 lists the waterways with fish life within the planning area.

Table 3-16. Waterways and Fish Species

Fish Species	Sweetwater River[1]	Harris Slough[2]	Oregon Slough[2]	Pacific Creek[2]	Jack Morrow Creek[3]
Rainbow trout (*Oncorhynchus mykiss*)	X				
Brown trout (*Salmo trutta*)	X	X			
Brook trout (*Salvelinus fontinalis*)	X	X	X	X	

Fish Species	Sweetwater River[1]	Harris Slough[2]	Oregon Slough[2]	Pacific Creek[2]	Jack Morrow Creek[3]
Yellowstone cutthroat (*Oncorhynchus clarki bouvieri*)	X				
Snake River cutthroat (*Oncorhynchus clarki subspecies*)	X				
White sucker (*Catostomus commersoni*)	X		X	X	X
Longnose sucker (*Catostomus catostomus*)	X		X		
Mountain sucker (*Catostomus platyrhynchus*)	X			X	X
Flannelmouth sucker (*Catostomus latipinnis*)				X	
Creek chub (*Semotilus atromaculatus*)	X		X		
Lake chub (*Couesius plumbeus*)	X		X	X	X
Longnose dace (*Rhinichthys cataractae*)	X				
Fathead minnow (*Pimephales promelas*)	X			X	X
Redside shiner (*Richarsonius balteatus*)				X	X
Speckled dace (*Rhinichthys osculus*)				X	X
Utah chub (*Gila atraria*)					X

[1] WGFD Classification 3: Important trout water; fisheries of regional importance.

[2] WGFD Classification 4: Low production trout waters; fisheries frequently of local importance but generally incapable of sustaining substantial fishing pressure.

[3] WGFD Classification 5: Very low production waters.

The Sweetwater River represents the highest-value coldwater fishery in the planning area, with water quality generally suitable for most other aquatic organisms. Overall quality tends to decline as conductivity, temperature, and turbidity levels progressively increase across the desert plains. Lack of full bank development and an adequate riparian shade canopy also result in a progressive deterioration of fish habitat downstream.

The portion of Pacific Creek above state lands has brook trout and fair pool habitat. Spawning potential is limited, but bank protection and cover are better than in lower reaches of the creek, where bank instability, poor habitat, and high summer temperatures limit salmonid spawning. Sixty to 100 percent of the bottom is silted, making the lower reach most suited to cyprinids, which populate the lower half of the creek.

Spring sources on Steamboat Mountain feed Jack Morrow Creek, which flows northwest to its confluence with Pacific Creek. Jack Morrow Creek is not suitable for salmonids because of low flows that only maintain pool habitat in the lower 10 miles, but it provides suitable habitat for nongame fish, mostly minnow species.

Water flowing into the Green River Drainage is considered a direct contributor to the habitat for four endangered fish species in the upper Colorado River. Water flowing into the Platte River Drainage (including the Sweetwater River) is also considered a direct contributor to T&E species using the Platte River in Nebraska. Although no T&E aquatic species have been identified within drainages of the planning area, all water withdrawals from these tributaries are considered to adversely affect these species and require ESA Section 7 consultation with the USFWS. Water depletions and their effect on protected species are discussed in the Biological Assessment (Appendix 3).

3.1.6.4 Reptiles

Reptile species within the planning area are primarily located among rocky outcrops, cliffs, and boulders. Species include the short-horned lizard (*Phrynosoma douglassii*) and sagebrush lizard (*Sceloporus graciosus*).

3.1.6.5 Special Status Wildlife Species

Special status wildlife species include species federally listed as T&E, proposed for listing, or candidates for listing under the ESA. They also include species designated by each BLM State Director as sensitive and those listed or proposed for listing by a state in a category implying potential endangerment or extinction. BLM is mandated to protect and manage threatened, endangered, candidate, proposed, and sensitive wildlife species and their habitat. BLM is also required to protect and manage sensitive species jointly identified with the appropriate state agency. The State of Wyoming does not have an official list of sensitive, threatened, or endangered wildlife species.

3.1.6.5.1 Federal Threatened, Endangered, and Candidate Species

Two wildlife species protected by the ESA have the potential to occur within the planning area. These species are listed in Table 3-17 and described further in the Biological Assessment (Appendix 3).

Table 3-17. Threatened, Endangered, and Candidate Wildlife Species that May Occur in the Planning Area

Common Name	Scientific Name	Federal Status	Occurrence in Planning Area
Bald eagle	*Haliaeetus leucocephaulus*	Threatened	Casual migrant
Black-footed ferret	*Mustela nigripes*	Endangered	Historical sightings and potential habitat exists
Western population yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Unknown
Gray wolf	*Canis lupus*	Nonessential Experimental Population	Historical occupancy and two recent confirmed sightings (Moody, WGFD 2003)
Grizzly bear	*Ursus arctos horribilis*	Threatened	Historical occurrence

Source: USFWS, Jack Morrow Hills Updated Species List, January 2, 2002

Bald eagles are found primarily along rivers and inland lakes, where their nests are usually located in large coniferous or deciduous trees. Streams and rivers with trees, especially conifers, are uncommon to nonexistent in the planning area. The bald eagle is classified as a casual migrant in the planning area and has been observed feeding on carrion near Pacific Butte and Jack Morrow Creek. Currently the only known active bald eagle nesting site near the planning area is on the Green River on Seedskadee National Wildlife Refuge. Bald eagles are known to occupy winter roosts in the cottonwood trees in the communities of Farson and Eden on private lands.

Historical documentation indicates the presence of black-footed ferrets in the Farson/Eden area adjacent to the planning area as late as 1984. Other areas where ferrets are presumed to have occurred are Sublette Flats, Seedskadee National Wildlife Refuge, and the Red Desert. Potential areas of ferret habitat can be delineated because of their association with prairie dogs and prairie dog colonies. Few formal surveys and inventories of prairie dogs have been conducted in the planning area.

Whooping cranes from the Gray's Lake flock were observed in the Rock Springs Field Office area in the late 1980s and early 1990s. In 1986, a lone whooping crane was observed on several occasions near Farson. The USFWS captured the bird to be used for mating with the Gray's Lake flock. During the summers of 1987 and 1988, a pair of whooping cranes were observed near Farson in crop fields and wetlands. Two observations of whooping cranes were made along Pacific Creek wetlands in 1991 and 1992. There have been no observations of whooping cranes in western Wyoming since 1992 and the last bird of the Gray's lake flock is believed to have died. The bird is now considered extirpated from western Wyoming (FWS 2003).

The western population of yellow-billed cuckoo inhabits open, streamside deciduous woodland with low scrubby vegetation and generally prefers cottonwood stands for foraging and willow thickets for nesting. This type of habitat does not exist within the planning area, which has no cottonwoods and only small thickets of coyote willow near the Sweetwater River. Formal surveys have not been conducted, and no reported sightings of cuckoos have occurred within the planning area.

The gray wolf historically occupied nearly all habitat types in North America including the planning area. Under current federal management by the USFWS, any wolves occurring in the planning area would be removed if they cause conflicts with other land management activities.

The grizzly bear historically inhabited the planning area around the Sweetwater River and Pacific Creek as reported in historical journals (Dorn). Under current federal (USFWS) and state (WGFD) management, any grizzly bears found in the planning area would be removed if they cause conflicts with other land management activities.

3.1.6.5.2 Wyoming BLM Sensitive Wildlife Species

Similar to the discussion of BLM sensitive plant species, the IM also lists Wyoming BLM sensitive wildlife species and management policy. The policy emphasizes preventing the need to list species under the ESA, avoiding or minimizing adverse impacts, and addressing these species through planning and management activities. Table 3-18 lists the Wyoming BLM sensitive wildlife species that may inhabit the planning area.

Table 3-18. Wyoming BLM Sensitive Wildlife Species

Common Name	Scientific Name	Habitat
Mammals		
Long-eared myotis	*Myotis evotis*	Coniferous forests; roosts in caves, buildings, or mines near a body of water
Fringed myotis	*Myotis thysanodes*	Elevations less than 7,500 feet in forests and shrublands
Spotted bat	*Euderma maculatum*	Desert and coniferous habitats
Townsend's big-eared bat	*Corynorhinus townsendii*	Coniferous forest; desert shrubland
Pygmy rabbit	*Brachylagus idahoensis*	Big, dense sagebrush
White-tailed prairie dog	*Cynomys leucurus*	Plains
Wyoming pocket gopher	*Thomomys clusius*	Dry ridgetops; gravelly, loose soil; greasewood
Idaho pocket gopher	*Thomomys idahoensis*	Stony, shallow soil
Swift fox	*Vulpes velox*	Shortgrass prairie
Avian		
Ferruginous hawk	*Buteo regalis*	Basin-prairie shrub, grassland, rock outcrops
Peregrine falcon	*Falco peregrinus*	Tall cliffs
Greater sage-grouse	*Centrocercus urophasianus*	Basin-prairie shrub, mountain-foothill shrub
Long-billed curlew	*Numenius americanus*	Grasslands, plains, foothills, wet meadows
Burrowing owl	*Athene cunicularia*	Grasslands, basin-prairie shrub
Sage thrasher	*Oreoscoptes montanus*	Basin-prairie shrub, mountain-foothill shrub
Loggerhead shrike	*Lanius ludovicianus*	Basin-prairie shrub, mountain-foothill shrub
Dwarf shrew	*Sorex nanus*	Mt foothills, shrub/grasslands, and greasewood flats
Mountain plover	*Chadrius montanus*	Areas of low vegetation
White-faced Ibis	*Plegadis chihi*	Marshes and wet meadows
Brewer's sparrow	*Spizella breweri*	Basin-prairie shrub
Sage sparrow	*Amphispiza billineata*	Basin-prairie shrub, mountain-foothill shrub
Fish		
Roundtail chub	*Gila robusta*	Colorado River drainage; mostly large rivers, streams, and lakes
Bluehead sucker	*Catostomus discobolus*	Colorado River drainage; large rivers, streams, and lakes
Flannelmouth sucker	*Catostomus latipinnis*	Colorado River drainage; large rivers, streams, and lakes
Amphibians		
Great Basin spadefoot toad	*Spea intermontana*	Springs; seeps; permanent and, temporary waters
Spotted frog	*Ranus pretiosa*	Ponds, sloughs, small streams

Source: Wyoming BLM Sensitive Species Policy and List, IM No. WY-2001-040, April 9, 2001.

3.1.6.6 Species of Concern

The Wyoming Natural Diversity Database lists other wildlife species of concern that occur within the planning area (Appendix 11). These species are lacking formal federal or state status or protection but are potentially threatened within the ecosystem.

3.2 HERITAGE RESOURCES

Heritage resources are archaeological, historical, paleontological, and Native American items, places, or events considered important to a culture, community, tradition, religion, or science. Archaeological and historic resources are locations where human activity measurably altered the earth or left deposits of physical or biological remains. Examples of prehistoric resources include arrowheads and other stone tools and debris from tool making, fire hearths, hunting and gathering camp locations, Native American trails and rock art sites, whereas examples of historic resources include livestock tending camps, pioneer roads and trails, and homesteads. Paleontological resources include vertebrate, invertebrate, and plant fossils. Places of concern to Native Americans societies include religious ceremonial areas, sacred places, including burial grounds and other places essential for the preservation of Native American traditional cultures.

The planning area is named after Jack Morrow, who had the reputation of being a common thief, swindler, and gunfighter. Although only limited formal cultural resources inventory has been conducted in the planning area, several significant resources and some important patterns of spatial distribution of archaeological resources have been identified (Map 64). Important historical resources and localities important to Native Americans have also been identified.

Legislative mandates require that cultural resources be considered during all undertakings on BLM land and that proposed land uses initiated or authorized by BLM avoid inadvertent damage to federal and nonfederal cultural resources. Authority to protect heritage resource sites is prescribed by numerous legislative mandates (Section 1.6.5), of which the National Historic Preservation Act (NHPA) of 1966, the Antiquities Act of 1906, the National Trails System Act of 1968, the American Indian Religious Freedom Act (AIRFA) of 1978, and the Archaeological Resources Protection Act (ARPA) of 1979 are a few of the key statutes.

Furthermore, Section 110 of the NHPA requires federal agencies to take a proactive role in identifying, evaluating, and nominating historic places for inclusion in the National Register of Historic Places (NRHP). Although funding for Section 110 work has been quite limited, the BLM has taken a number of steps to ensure proactive management such as identification, marking and interpretation of historic trails, designation of ACEC related to historic places including the South Pass National Historic Landscape ACEC and the White Mountain Petroglyphs ACEC, and identification of a number of places of concern to Native Americans and consultation with tribal representatives regarding those resources.

BLM has also strengthened its ongoing partnerships with the Wyoming State Historic Preservation Office (SHPO), and with several Native American tribes, to improve its appreciation of the contextual framework within which historic properties are evaluated. Historic properties are identified by several means including consultations, historical literature review, and on-the-ground inventory. As historic properties are identified, they are integrated into the SHPO data set for future reference and consideration in planning processes.

3.2.1 Historic Trails

The National Park Service administers congressionally designated National Historic Trails found in the planning area (Map 64). However, management of federal lands containing congressionally recognized trails is left to those agencies that have jurisdiction over the lands on which the trails occur (in this case BLM). BLM approved the Oregon/Mormon Pioneer National Historic Trails Management Plan in 1986, which governs management of these resources. BLM is preparing a statewide National Historic Trails context study to help identify and manage significant historic trail resources. BLM is also in the process of consulting with the SHPO and National Park Service concerning additional guidance for management of these resources.

3.2.1.1 South Pass

Beginning in the winter of 1812–1813, the South Pass, located in the northeastern part of the planning area (Map 64), "became indelibly written in the annals of American history" (Devoto 1943). The gradual ascent of South Pass from the east along the Sweetwater River provided a relatively easy route across the towering Rocky Mountains. South Pass would allow hundreds of thousands of emigrants to move from the nation's eastern seaboard and central prairies to the fertile farmlands of western coastal valleys and rich hardrock mining bonanzas throughout the west. Historically, South Pass was used first by fur traders for easy entry into the river basins of the central Rocky Mountain region. Eventually over one-half million people and probably five times that many livestock traversed South Pass in their migration to the west coast. In 1959, Congress designated the South Pass National Historic Landmark in recognition of the importance of the pass to the pioneer migrations across the American west.

3.2.1.2 Oregon and California Trails

The drive to settle the Pacific Northwest and California would eventually give the United States an upper hand in control of territory claimed by the British Empire and the newly independent nation of Mexico. Beginning in 1838, people moved into Oregon to claim fertile farmlands in the Willamette Valley. Meddling in local political affairs by American citizens living in Mexico's territory of Alta California soon resulted in California's fall under the influence and eventual political domination of the United States. The discovery of gold near Sutter's Fort in northern California and the resulting swarm of settlers during the gold rush of 1849 for all intents and purposes cemented California's future as an American possession. The Oregon Trail and California Trail, which are located in the same corridor over South Pass and pass through about 20 miles of the planning area, were designated by Congress as National Historic Trails in 1978 and 1992, respectively.

3.2.1.3 Mormon Pioneer Trail

In 1847, pioneers of the Church of Jesus Christ of Latter-Day Saints, better known as Mormons, traveled over South Pass to settle in the valley of the Great Salt Lake in present-day Utah. This was the beginning of the migration of more than 70,000 Mormons and the colonization of the vast area that was to be known as Deseret. Eventually Mormons came to dominate the economy and politics of what would eventually become the states of Utah and Nevada, as well as significant portions of present-day Idaho, Wyoming, Arizona, and even California. The pioneer route of the Mormon Trail, used by Brigham Young's initial party in 1847, was designated a National Historic Trail by Congress in 1978. Within the planning area, the Mormon Pioneer Trail is located in the corridor over South Pass.

3.2.1.4 Pony Express Trail

The Pony Express route was designated a National Historic Trail in 1992 in recognition of its significance, but more so because of the romance of this short-lived operation that carried the United States mail from settlements in the East to the west coast during the Civil War. This helped to preserve political control over western regions by the United States Government. Within the planning area, the Pony Express Trail is located in the corridor over South Pass.

3.2.2 Native American Sites

University of Wyoming professor emeritus George Frison (1971) postulates that pottery recovered from the Eden-Farson site (Section 3.2.4.3) was made by Shoshone people. It is known that several Native American tribes, in addition to the Shoshone, were also present in the region in the late 18th and early 19th centuries, including the Ute, Bannock, Crow, Blackfoot, and to a degree the Arapaho. Tribes from the Northern Plains, Great Basin, and Columbia Plateau, as well as European Americans participated in fur trade rendezvous held along the Green River, located within 100 miles of the planning area. It is also likely that other groups, including Athapaskan-speaking ancestors of the modern-day Navajo and Apache people of the Southwest, passed through this region only a few hundred years before Europeans arrived in North America.

The White Mountain Petroglyphs site, located in the southwest corner of the planning area, contains historic and prehistoric images carved into rock. Images of human figures in several different styles may indicate some time depth to the site, although all the rock art is thought to have been drawn in the past 500 or so years (Tanner and Vlcek 1995) during what archaeologists call the Firehole Phase. Native American traditional elders have expressed interest in the White Mountain site and several other rock art locations in the greater Killpecker Creek area. At the request of tribal elders, the exact locations of sensitive Native American sites and the religious practices they may represent are kept confidential to protect them.

Several times during consultations, both tribal councils and elders pointed out the importance of wildlife, especially elk in the Jack Morrow Hills area. The time depth of Native American appreciation of the Steamboat elk herd seems evident at White Mountain Petroglyphs. A number of renditions of elk are depicted in an amplified scale compared to warriors on horseback, bison, tipis and other features. The fact that these drawings of elk are very detailed, and that they are roughly five times larger than people and other animals depicted at the site, reinforces the contention by modern Native Americans that the Steamboat elk herd has long been important to Native American people of the area.

The unique setting of mountain vistas, volcanic cones, and flat top mesas against a backdrop of white drifting sand dunes provides a spiritual experience for Native Americans. Several areas are identified as having landscape characteristics that typically are associated with respected sites. Although these areas have been roughly delineated, no attempt has been made to identify specific sites that may be of concern to traditional Native American peoples. Traditional elders have expressed interest in several landforms, including Killpecker Sand Dunes, Steamboat Mountain, Steamboat Rim, White Mountain Rim, Essex Mountain, Monument Ridge, and Boars Tusk within the planning area; the North and South Table Mountains and the Leucite Hills immediately to the south of the planning area; and Pilot Butte west of the planning area. Consultation visits with traditional elders indicate that these landmarks and the landscape vista of which they are a part are associated with the physical remains of a number of respected places associated with Native American religious practices.

The term "respected places" was first used by a Shoshone source to describe places that are of interest to individual tribal members and should be respected by them. These places are not high profile places but rather are often simply a few rocks in a pile on a ridge, or something similar. The term can also encompass a broad range of physical features including stone cairns, alignments such as medicine wheels, and rock art sites. For some Shoshone, the term "respected place" would apply to any place with any evidence of ancient habitation. A respected place may indicate where a single Native American, at some time in the distant past, may have made a prayer or an offering, or it may mark the place of a significant event in this individual's life. Respected places, therefore, are not always significant to the entire tribe; however, upon seeing the feature, tribal members would respect the place because it was important to the individual who created it. Some relationship of these features to natural landscapes such as mesas is recognized by Native American sources but the precise nature of this association is presently not well understood. Research is continuing into these connections between culture and landscape.

Many respected places known to the BLM are not identified in the JMH CAP because they are often very small, inconspicuous features and are extremely vulnerable to destruction. These places are therefore identified by BLM specialists only on a need-to-know basis when they are near a proposed BLM action. In these cases, BLM consults with tribal representatives and often takes steps to protect these locations even though they often would not qualify for the NRHP under any of the criteria in NRHP guidelines, as sacred sites under the AIRFA, or under the provisions of the much less defined terms in E.O. 13007.

Consultation with the Wyoming State Historic Preservation Officer indicates that there is not enough information to determine which of these respected places may be NRHP eligible Traditional Cultural Places (TCP) or sacred sites as defined under AIRFA and E.O. 13007. TCPs are properties associated with cultural practices or beliefs of a living community that are rooted in that community's history and are important in maintaining the continuing cultural identity of the community (USDI, 1998c). Even though some of these sites may not qualify as TCPs, BLM believes they do qualify for the National Register under Criteria A, because their apparent antiquity and complexity indicate a level of "association with events, activities, or patterns" important in American history. These sites also often contain huge amounts of information regarding Native American cultures, and therefore BLM believes they also qualify for the NRHP under Criteria D. The BLM has conducted considerable research into these issues over the past 15 years, and this historical information has been presented in several forums including academic publications and conference papers.

Sacred sites are specific, discrete, narrowly delineated locations on federal land that are identified by a Native American tribe, or Native American individual determined to be an appropriately authoritative representative of a Native American religion, as sacred by virtue of their established religious significance to, or ceremonial use by, a Native American religion. E.O. 13007 requires that the tribe, or the authoritative tribal representative, inform the federal agency of the importance of the site. This guidance generally requires a location to have some degree of ongoing use over time by more than a few Native peoples; therefore, the identification of a feature as having possibly been used by an individual or even a family at some time in the past probably does not qualify the place as a sacred site. Nearly all of the sites described in this section, and otherwise known in the planning area, were identified first by BLM archaeologists or consulting archaeologists who made Native Americans aware of them. The net effect has been that tribal authorities are now aware of specific places that associate with places known only vaguely from tribal traditions and oral history and most important tribes are now using these places in their attempts to revitalize their culture and religions and to increase the self-esteem of tribal young people.

3.2.2.1 Indian Gap

A site of concern to traditional Native American elders is the historic Native American Trail between the Ute Reservation in Utah and the Eastern Shoshone Reservation in the Wind River Basin. The name "Indian Gap Trail" was derived from the gap between Essex Mountain and Steamboat Mountain through which the trail passes. The precise antiquity of the trail is unknown, but historical records show the trail on the 1884 General Land Office plat for the area known as Indian Gap, and it is mentioned by a Native American historian as having been used until about 1906. Another source advised that Shoshone traveled the trail to haul coal from Rock Springs to their reservation at Fort Washakie in the early years of the 20th century. The Indian Gap Trail is a significant historic resource and may or may not also be a Traditional Cultural Property. To date, aerial reconnaissance has revealed a potential route of the trail; however, the route has not been verified on the ground, nor has it been mapped.

3.2.2.2 Native American Consultation

The AIRFA and the NHPA are procedural statutes requiring agency officials to take into account concerns of Native Americans regarding management of places of concern for religious, cultural, or historical reasons. These laws encourage a proactive consultation process between agency officials and Native American representatives. However, the legislation also recognizes that agency officials will not always be able to completely accommodate the wishes of Native American peoples.

The intent of consultation efforts is to foster respectful discussion aimed at resolving potential conflicts by avoiding areas of concern or by developing mitigation strategies that will lessen adverse effects to the extent possible. Both the AIRFA and the NHPA recognize that total avoidance of areas of concern will not always be possible; however, the laws and their implementing regulations encourage federal agencies to accommodate the needs of Native American peoples, especially where religious practices are concerned, to the extent possible without violating existing laws, regulations, and other preexisting mandates. While the BLM acknowledges the requirement to consult with tribes, it is also incumbent upon tribal representatives to bring places of concern to the attention of BLM officials.

Native American consultation with tribal elders is appropriate when identifying resources that may be important to tribal people represented by those elders. Consultation efforts have developed between the tribal governments of the Eastern Shoshone Nation, Uintah-Ouray bands of the Northern Ute Tribe, Shoshone-Bannock Tribes, and Northern Arapaho Tribe and the BLM Rock Springs Field Office. In some cases other tribal entities may also be involved in consultation with BLM.

BLM specialists have done extensive historical, ethnographic, and archaeological research into the Native peoples who occupied the Green River Basin in the past 10,000 plus years to identify the appropriate tribes to consult. Naturally, knowledge of more recent (e.g., the protohistoric period) human habitation of the area is far more developed than the understanding of prehistoric times.

This research indicates that three of the four tribes BLM consults with most extensively (e.g., the Ute-Aztecan-speaking Eastern Shoshone, Shoshone-Bannock, and Ute) have the greatest time depth in this region. The Northern Arapaho are known to have been in the area on a less continual basis for some time but not to have had the high degree of affinity with the area that the Shoshonean groups had.

Since at least the mid-nineteenth century, the Arapaho have been in the area and they are known to have contested to some degree with the Shoshone groups for control of the area. It is expected that Arapaho use of the area increased after they came to the Wind River Reservation in 1878. Before that time there was occasional Arapaho presence in the area often times for the purpose of raiding and warring with the Shoshone. The Arapaho presence in the JMH CAP planning area was likely never as strong or continuous as the Shoshone groups.

The Crow similarly contested for this area to some degree over many years in the past. The Crow also were integral partners in a cursorily documented trade relationship with the Shoshone groups. Indeed, many historians and anthropologists suggest a trading network covering the entire American West. Most believe a central foci of this network was centered in the Green River Basin where Ute (and later Comanche) traders brought horses acquired in the Southwest to trade with their Shoshone cousins who in turn traded them with Crow intermediaries who eventually traded with Mandan, Hidatsa, and other Lakota groups in the Missouri River Basin to the Northeast. At no time is it believed that the Crow had an extensive and permanent presence in the Green River Basin. The Crow, it could be argued, did have a considerably greater affinity with the Wind River-Big Horn Basin regions to the north where they contested for control of the area with the Shoshone and perhaps other groups, including at times the Blackfeet.

Likewise, the Blackfeet were present at times in the Green River Basin, sometimes trading, but more often warring with Shoshone occupants of the region. The Blackfeet presence in the area is probably somewhat earlier than extensive Crow presence. The Blackfeet are known to have been involved in the fur trade early in the eighteenth century, and at times they traded, especially for horses, with Shoshone. At that time and well into the nineteenth century there was much raiding among tribes across the West, mostly in quest for horses and all the power (real and ideological) that horses brought to the Plains Indian and Columbia Plateau cultures, which reached their zenith in the nineteenth century.

Between 1824 and 1840, EuroAmerican fur traders connected with the probably already long established trade network, and the famous fur trade rendezvous developed. Much of the fur trade during those years was centered in the Green River Basin attracting members of numerous tribes to the region for varying durations. Participants in the fur trade included individuals from almost every tribe in the American (and indeed Canadian) West. If anything, the tribes of the Columbia Plateau (Nez Perce, Flathead, Cayuse, et al.) were more strongly represented in this process than most of the Plains tribes (e.g., Cheyenne, Arapaho, and Lakota). The Blackfeet, while present, were probably represented somewhat less than the Plateau groups, the Crow, and the resident Shoshone societies.

These many other groups' presence in the Green River Basin was never permanent and each group always maintained stronger affinity with other regions of the West. Based on this knowledge, the BLM offices in the Green River Basin consult most extensively with the Eastern Shoshone, Shoshone-Bannock, Ute, and Arapaho tribes that BLM believes had substantial historic occupancy of the region. According to BLM guidance, tribes that had a "short-term or transitory use of the lands" (i.e., the Green River Basin) are not to be the primary focus of consultation efforts. Nonetheless, efforts have been made to reach out to other groups such as the Medicine Wheel Alliance.

The Comanche have long been recognized as closely related to the Eastern Shoshone, but only recently has the continuity of their presence in the Green River Basin been identified. This recognition resulted from BLM-initiated investigations of a rock art site in the Rock Springs Field Office area, though some 25 miles south of the JMH CAP planning area. When the level of Comanche presence in the area and the potential for Comanche sites in the area were recognized (in 2001), the BLM began to invite them to participate in consultation processes more often. Unfortunately, their present-day location in Oklahoma may somewhat limit their participation in these processes. This is partly because departmental policy does not allow the BLM to financially assist tribal representatives in participating in the consultation process. Efforts are being made, however, to have more ethnographic studies completed in the Green River Basin, and BLM anticipates involving the Comanche in these studies.

3.2.3 Paleontological and Archaeological Resources

The limited inventory of the planning area has identified approximately 1,000 cultural resources localities within the region, estimated to represent 2 percent of potential localities in the region. Despite this, some important patterns of resource distribution are apparent, particularly for archaeological sites.

The BLM manages paleontological resources for their scientific, educational, and recreational values and mitigates adverse impacts to them as necessary. In general, it is permissible to collect reasonable amounts of common invertebrate fossils from the public lands for non-commercial purposes, and to collect limited amounts of petrified wood as outlined in 43 CFR 3622. The Department of the Interior has administratively determined that the collection of vertebrate fossils requires a permit. Paleontological permits are issued under the authority of the Federal Land Policy and Management Act (FLPMA), and such permits are generally issued only to qualified paleontologists. The Tertiary volcanic and the pre-Cambrian igneous rocks have no potential for paleontological resources. The sand dunes and alluvial deposits in the planning area are unlikely to contain fossils because of their recent age. Common invertebrate fossils (clams, etc.) are known to occur in the Cretaceous rocks of the Rock Springs Uplift, and scattered fragments of dinosaur fossils have been found in the Lance Formation on the Rock Springs Uplift (Breithaupt 1982). These rock formations are found at the southern edge of the JMH CAP planning area and have a similar fossil potential. Vertebrate fossils are known to occur in the Fort Union and the Wasatch formations around Bitter Creek, Wyoming. The American Museum of Natural History, the University of Colorado, and other institutions have collected numerous primate and other small mammal fossils from these formations. The Fort Union Formation has some potential for fossils but is largely buried under the sand dunes within the planning area. The Wasatch Formation composes much of the lower elevations within the planning area; it may have some potential for fossil occurrences. The Tipton Shale Member (Green River Formation) has a persistent layer of freshwater snails at its base (*Goniobasis* and *Viviparus*) and fossils may be present elsewhere in the planning area.

3.2.3.1 Paleosol Deposition Area

A region of soil deposition, known as the paleosol deposition area, dating back over ten thousand years to the end of the Pleistocene Ice Age occurs in the western portion of the planning area. Indications suggest that this depositional pattern may also extend across the southern edge of the planning area along the flanks of the Killpecker sand dune field, as well as along the Pacific Creek drainage basin in the northern part of the planning area. A number of extremely significant archaeological resources, including the Finley and Krmpotich sites, are located here. Because the soil unit occurs across broad regions of the planning area, similar sites of great antiquity and scientific significance should be expected where this stable soil regime is preserved.

The Finley and Krmpotich archaeological sites are not typical of archaeological sites in this region. They hold cultural evidence from some of the earliest inhabitants of the North American continent and are some of the most intact manifestations of such archaeological evidence known anywhere on the continent (Frison 1998). Many of these sites are deeply buried and have little if any surface manifestation. An array of archaeological methodologies will need to be implemented if resources like Finley and Krmpotich are to be located before they are impacted by development. Unless scientists (geomorphologists and archaeologists) understand the genesis of the Killpecker dune field and the broad ancient soil deposit associated with it, they will never be able to fully understand its significance, much less that of the archaeological material it contains. Predicting the location of archaeological remains within these deposits is beyond the grasp of science at the present time.

The protohistoric Eden-Farson site is another kind of archaeological manifestation observed in the planning area. The site sits on top of the stable soil deposit in the area where the Finley and Krmpotich sites are located, rather than being buried within those soils. The Eden-Farson site contains archaeological evidence of a large hunter-gatherer winter encampment, including remains of winter shelters, pottery, and a wide array of stone tools and bones from antelope that were apparently a major portion of the winter food supply.

Radiocarbon dates from the Eden-Farson site indicate that the site was probably occupied immediately before Euro-Americans first came into direct contact with Native Americans in this region (about 200 to 300 years ago). No Euro-American artifacts were recovered from the Eden-Farson site. It is assumed that direct contact between Native American and Euro-American cultures had not occurred in this region at the time the Eden-Farson site was occupied. However, journals (Morgan 1964) from early Euro-American traders, including William Ashley's men, especially Jedediah Smith, mention the presence of two large Native American encampments in this region. Smith identifies one camp as Crow and the other as Shoshone.

3.2.3.2 Archaic Sites

The planning area also has a number of archaeological sites that are younger than the PaleoIndian-aged Finley and Krmpotich sites. “Archaic” sites ranging from 2,000 to 7,000 years in age are known to occur in the region. The CK Adams site, as an example, contains a series of archaeological manifestations that were located both on the surface and buried in stratigraphic contexts. A limited excavation of the site was undertaken to salvage several hearth features that were rapidly eroding and to test the area for in-place buried materials. Because the effort was undertaken in an emergency situation, BLM has not fully studied and reported the results of the effort. The state archaeologist who conducted part of the salvage reported his results, which are due to be published in the near future (Miller 1998).

Perhaps the most important information gleaned from the CK Adams site is that stratified sites dating from the late prehistoric period through the archaic period should be expected in the Pacific Creek drainage basin. This portion of the planning area contains buried soils that are being crosscut by modern drainage channels, including Pacific Creek, resulting in the exposure of archaeological manifestations.

The stable soil deposit in the Pacific Creek basin seems somehow associated with the Killpecker dune field, but the nature of that association is not fully understood. However, although sites along Pacific Creek do hold archaeological deposits dating back 7,000 years, they do not appear from present evidence to have PaleoIndian deposits (i.e., from 7,000 to 12,000 years before present). Because stratified deposits are the best source of information about changes in human behavior over long periods of time, sites like the CK Adams site are quite significant.

3.2.4 Other Cultural and Historical Resources

3.2.4.1 South Pass National Historic Landmark and South Pass Historic Landscape

The significance of South Pass in the development of the United States as a nation was cause for designation as a National Historic Landmark in 1959. Upon its designation, no attempt was made to designate precise boundaries for the landmark.

In 1984, the National Park Service proposed a boundary encompassing approximately 5,500 acres, of which nearly 1,000 acres were privately owned. Local landowners, fearing the preservation mandate of the National Park Service, protested the proposal, which eventually was not pursued by that agency. It was then up to BLM to develop management prescriptions designed to protect the South Pass National Historic Landmark, which lies within its land management jurisdiction.

To ensure that the intent of the Congressional National Historic Landmark designation was not compromised, BLM developed the South Pass Historic Landscape within the Green River Resource Management Plan (GRRMP) (USDI 1997). The management objective for the South Pass Historic Landscape is to protect the visual and historical integrity of the historic trails and surrounding viewscape. Management prescriptions for the South Pass Historic Landscape ACEC prohibit development that would be visible within 3 miles of the historic trails corridor. A Geographic Information System (GIS) analysis of the vista indicates that within an arbitrary 3-mile distance from the main National Historic Trail corridor, about 23,000 acres are visible from the trails, while about 29,000 acres are shielded from view by topography.

It is anticipated that refinements in viewshed modeling technology, and additional knowledge regarding historic trail locations may change the configuration and acreage of the South Pass Historic Landscape somewhat. As these refinements are identified, the information would be included in the GRRMP through maintenance actions. Boundary adjustments other than refinements or minor adjustments would require further analysis and if necessary an amendment of the ACEC boundary and management plan (for example, a net change of more than 10 percent [e.g., 5,000 acres]).

3.2.4.2 South Pass Historic Mining Region

Immediately following the Civil War, a rather significant discovery of gold was made in the South Pass region. By 1869, hundreds of prospectors had converged on the area and several small communities had been developed. The most important of the settlements was South Pass City, which today is a State Historical Park. Because the transcontinental railroad had just been completed between Omaha, Nebraska, and Sacramento, California, commerce with the new gold fields could be linked with the larger national economy much more easily than for the earlier historic trails network. This certainly did not mean, however, that wagon roads were obsolete. A network of roads soon developed to connect railheads on the Union Pacific Railroad in southern Wyoming within the South Pass region. South Pass City is located a few miles east of the planning area, but some historic resources associated with mining activity and community development, such as roads, are located in the JMH CAP planning area.

3.2.4.3 Expansion Era Roads

By 1870, roads to the gold fields had been started from three railheads on the Union Pacific: Point of Rocks, Green River, and Bryan. These became known as Expansion Era roads, linking communities along the railroad with newly developing mining, agricultural, and military settlements in the central Rocky Mountains (Map 64). Remnants of the three Expansion Era roads to the South Pass region cross the planning area, as do roads to ranching communities (such as New Fork in the upper Green River Basin). Expansion Era roads also run through the planning area from Rock Springs to military posts established to administer the Wind River Indian Reservation. Several stage stations and freighter's camp locations associated with these Expansion Era roads are known, including Freighter's Gap, Fourteen Mile, and The Wells within the planning area. Although the general routes of the Expansion Era roads are known, and some are marked on General Land Office plats, the physical integrity and historical significance of these resources have generally not been evaluated.

3.2.4.4 Ranching-Related Historic Sites

Soon after the Expansion Era road network began to develop, cattle and sheep ranching became important to the region's economy. Several early ranching-related historic sites are located within the planning area. The best-preserved ranching-related site on BLM-administered public lands is the Crookston Ranch, which includes several historic structures. The Green River RMP designates this site for special management for the interpretation of the region's ranching history. Numerous other less impressive sites related to the history of pastoral agriculture, including small, mostly unsuccessful homesteaders sites; sheepherder camps and shearing corrals; horse trapping facilities; and irrigation systems to support production of wild grass hay, are represented in the planning area. However, the most ubiquitous agricultural-related site is the common sheepherder or cowboy campsite, which today consists of only a small scattering of historic artifacts across the landscape.

3.2.4.5 The Tri-Territory Marker

The Tri-Territory Marker is located on the northeast side of Steamboat Mountain within the core area of the JMH CAP planning area. This monument marks the site where the Oregon Territory, Mexican Territory, and the Louisiana Purchase had a common boundary in the nineteenth century. A modern structure marks the site, commemorating its important national historical geographical location within Wyoming. The marker was placed and is maintained by the Rock Springs Kiwanis Club in cooperation with BLM. BLM has received a number of requests for information about this location, and it should be more strongly integrated into the Rock Springs Field Office cultural and recreation management programs.

3.2.5 Unique Geological Features

Boars Tusk, located in the southwest portion of the planning area, is the remnant of a volcanic neck. Boars Tusk is a predominant landmark feature providing a striking visual contrast to the surrounding landscape. The Boars Tusk is located within the Greater Sand Dunes ACEC. Management actions identified for Boars Tusk in the Green River RMP are summarized in Appendix 2.

The Pinnacles are a well-known natural landmark of the Red Desert. Geologically, the Pinnacles are formations that are unique to this area because of their pyramid-like structure. The many small geologic microsites that are found in the area consist of small sandstone structures, volcanic intrusive dikes, badland, and windblown-type features. The Pinnacles themselves are nesting grounds for the ferruginous hawk. Antelope, elk, deer, and wild horses can also be found in the area. Recreational opportunities include big game hunting, rock hounding, camping, and hiking.

3.3 TRAVEL, ACCESS, AND REALTY

This resource management category includes the land use programs of transportation, off-highway vehicle (OHV) use, lands and realty management, rights-of-way (ROW), access routes and issues, and transport of hazardous materials.

3.3.1 Travel Management

Travel management includes the description of the existing roads and trails network to and through the JMH CAP planning area and the planning for manageable transportation routes.

3.3.1.1 Existing Network

The existing transportation network within the planning area is shown on Map 65. The network includes state, county, and BLM access roads. Historic and current uses of the roads have been primarily by livestock operators, recreationists, and mineral developers. Numerous trails and tracks cross the planning area and are referred to as census track trails. These trails are from remote sensing data files and have not been verified as to status. They are inaccessible to vehicular use, and they can include wildlife trails, access roads to wellheads, and pipeline or communication ROWs.

The primary paved access routes to the JMH CAP planning area are U.S. Highway 191 and Wyoming Highway 28. Unpaved county roads off the two main highways to the planning area include Superior Cutoff Road, Eden area roads, Chilton Road, Freighter Gap Road, Bar X Road, Oregon Buttes Road, and Nine Mile Road. Tri-Territory Road, a BLM road, also provides access to the planning area. Most of these roads have some degree of gravel or aggregate surface and are periodically maintained, but they can become impassable when wet or during winter months. County roads are maintained, but generally there is no snow removal during winter.

County roads provide public access across private land, whereas BLM roads or other roads that cross private lands may not provide such access. Although BLM roads are administered by a public agency and are open to use by the general public, they are not public roads, and permission is needed to cross private lands.

3.3.1.2 Transportation Planning

Transportation planning involves the reasoned and organized development of a plan that provides access to the planning area for multiple uses, including recreation, mineral development, and livestock operations. Transportation planning provides direction for future road development and a basis for future exploration, development, and production transportation activities. The transportation planning area includes U.S. Highway 191; Wyoming Highway 28; and county, BLM, and undeveloped roads and routes within and adjacent to the area.

Roads are classified according to ownership, use, size, and traffic volume. These classifications, listed in Table 3-19, are used in the development of a transportation plan, particularly for well field development.

Table 3-19. Road Classifications

Arterial	State highways or county roads Provides primary access High-traffic volume
Collector	BLM roads Connects with public road system Provides access to large blocks of land Accommodates mixed traffic and serves many uses High-traffic volume within BLM road system
Local	BLM roads or industry/operator roads on BLM-administered lands Connects with collector roads of public road system One- or two-lane roads Provides access to multiple well locations Accommodates fewer traffic types and serves fewer users Low-traffic volume
Resource	BLM roads or industry/operator roads on BLM-administered lands Connects with local roads or collector roads One-lane spur roads Provides access to the individual well location Accommodates and serves industry/operator users Low-traffic volume

A draft transportation plan for the JMH CAP planning area proposes specific access and travel routes in areas of particular concern as a result of anticipated development and use (Appendix 12). Road and ROW corridors and transportation standards would be described in a technical support document for specific projects occurring within these areas. The criteria to be considered in transportation planning include existing access rights, coordination with other jurisdictions (i.e., counties and state), seasonal limitations, and location of sensitive resources including Native American respected places and T&E species.

3.3.2 Off-Highway Use

E.O.s 11644 and 11989 and the regulations contained in 43 Code of Federal Regulations (CFR) 8340 provide the parameters for the management of OHV activities on public lands. The objectives of these regulations are to conserve soil, wildlife, water quality, native vegetation, air quality, and heritage resources while providing for appropriate recreational opportunities and promoting the safety of all users.

The use of OHVs on BLM lands has increased in popularity in recent years and accounts for approximately 17,000 annual recreation visitor days in the JMH CAP planning area. Recreationists, hunters, livestock operators, and oil and gas surveyors and inspection crews account for the majority of OHV users in the planning area. The Greater Sand Dunes Recreation Area, located within the eastern portion of the Greater Sand Dunes Special Recreation Management Area (SRMA), provides more than 10,000 acres of open area for OHV users.

Off-highway access is designated to protect resources and the landscape from damage, to ensure public safety, and to minimize conflict among users. The three main designations are "open," "limited," or "closed" to OHV use and are described in Table 3-20. Designations are made through the land use planning process and are updated and revised as necessary to meet resource management objectives and to mitigate OHV-related impacts.

Table 3-20. OHV Use Designations

Designation	Use
Open	Area of intensive OHV use with no resource, user, or public safety conflicts Vehicle travel permitted both on and off roads Vehicle must be operated responsibly and must not cause significant damage to resources or to other authorized uses of public land
Limited	Restricted OHV use to meet specific resource management objectives Vehicle travel permitted only on existing roads and trails in existence prior to the designation Vehicle travel permitted only on designated roads and trails that are identified, signed, and mapped by BLM Vehicle travel limited by the number and type of vehicle Vehicle travel limited by time or season Vehicle travel limited to licensed or permitted use
Closed	Prohibited OHV use to protect resources, ensure visitor safety, or reduce conflicts Vehicle travel not allowed both on or off roads and trails Access by nonmotorized vehicle is generally allowed

The limited designation allows for parking within 300 feet from the edge of the road surface to accommodate recreationists, provided no damage occurs to the resources or hazard is imposed on public safety. Motorized vehicle use within 300 feet of roads and trails is also allowed to retrieve big game and trophy game animal kills.

The OHV use designations for the JMH CAP planning area were made in the Green River RMP (Map 9). The WSAs, Boars Tusk, and Crookston Ranch are closed to OHV use. Official designations for the areas identified as limited to designated roads and trails would be completed through site-specific activity planning with public input. Until that designation is completed, the areas are managed as limited to existing roads and trails.

3.3.3 Access and Realty Actions

The BLM road network in the JMH CAP planning area provides access to public and private lands for different management activities and recreation. It is BLM policy to provide reasonable access to public facilities and resources to meet the needs of private landowners, visitors, and users, including those with disabilities, while minimizing conflicts among users, promoting visitor safety, and preventing damage to resources.

Livestock operators use the many two-track roads and trails within the planning area to access water developments and other range improvements; recreationists use the routes for hiking, camping, hunting, sightseeing, rockhounding, and wildlife and wild horse viewing. Some existing roads are not passable during inclement weather or during winter months. Consequently winter access is subject to seasonal road closures, and plowing of these roads is considered only on a case-by-case basis. Access is also subject to non-weather-related seasonal closures to protect resources during more sensitive times of the year, including birthing and wintering.

3.3.3.1 Rights-of-Way

A ROW grants the use of a specific piece of public land for specific facilities for a specific period of time. It is the policy of BLM to authorize all ROW applications at the discretion of the authorized officer in the most efficient and economic manner possible. The majority of ROWs are authorized under Title V of the FLPMA and the Mineral Leasing Act. The ROWs under FLPMA are for structures, pipelines, and facilities to store and transport water, electrical power, communication systems, and solid materials, and for highways, roads, railroads, and other means of transportation. Under the Mineral Leasing Act, ROWs are granted for oil and natural gas gathering, distribution, and transmission pipelines and related facilities.

Management objectives address the designation of ROW corridors for public lands that currently accommodate existing authorized ROWs consistent with natural resource planning decisions. The realty program in the JMH CAP planning area is driven by the local mineral industry, and the majority of the ROWs issued are in support of oil and gas development and for county roads. No utility corridors have been designated in the planning area; however, an east-west window for underground utility lines is located along the southern border. New ROW corridors would be considered and designated for interstate and intrastate ROW facilities to meet demand forecasts for utility commodities. A communication line, power line, and abandoned railroad line cross the width of the planning area, and two communication sites are also located on public lands.

Portions of JMH are designated as avoidance or exclusion areas for ROWs. Avoidance areas are public lands where future ROWs may be granted only when no feasible alternative route or designated ROW corridor is available; exclusion areas would permit future ROWs only when mandated by law. The ROW avoidance and exclusion areas for the JMH CAP planning area were established in the Green River RMP (Map 8).

3.3.3.2 Exchanges, Withdrawals, and Ownership Adjustments

The majority of the planning area (surface and mineral) is composed of solid blocks of public lands administered by BLM. Nonfederal landowners include the State of Wyoming and private individuals. No communities are located within the area. Rock Springs and Superior are the nearest incorporated cities, and Eden-Farson is the nearest unincorporated populated area.

BLM provides for acquisition, use, disposal, and adjustment of land resources when it is in the public interest and consistent with approved land use plans. Acquisition can be by exchange, purchase, easement, or donation. The land acquisition program is designed to improve management of natural resources through consolidation of federal, state, and private lands and to secure land necessary to protect endangered species, promote biological diversity, increase recreational opportunities, and preserve heritage resources. Exchanges are only pursued with willing landowners and are the preferred method of obtaining lands, because federal purchase dollars are limited. Lands to be exchanged must be of equal monetary value and located within the same state. BLM is proposing the exchange of state inholdings in the Sand Dunes WSA, in the Greater Sand Dunes ACEC, and on Steamboat Mountain.

Withdrawals are used to protect sensitive environmental values, protect major federal investments in facilities, support national security, and provide for public health and safety. A withdrawal removes an area from settlement, sale, location, or entry under the general land laws for the purpose of limiting activities and to maintain other public values. Public land orders provide for the initiation, modification, extension, or revocation of land withdrawals.

Existing withdrawals in the planning area include lands classified as prospectively valuable for oil shale and coal. This classification indicates that oil shale and coal have priority for mineral resource development over location of mining claims. Oil shale and coal are leasable minerals, and therefore withdrawals to protect these minerals from speculation through mining claim activity are no longer applicable. Prior to revocation, withdrawn lands will be reviewed to determine whether any other resource values require withdrawal protection. Upon revocation, the area would be open to filing mineral claims, exploration, and development of locatable minerals. The White Mountain Petroglyphs located in the oil shale classification lands and Greater Sand Dunes ACEC, special status plant sites, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit located in the coal classification lands would be withdrawn from mineral location prior to the revocation.

3.3.4 Hazardous Materials

Hazardous materials are transported through the JMH CAP planning area and used primarily by mineral developers. There are no known hazardous materials sites within the planning area other than the materials kept and used by the minerals industry at individual well locations. A few old abandoned reserve pits remain scattered throughout the area but have not been tested for the presence of hazardous materials or hazardous waste. Small oil and gas fields within the planning area could contribute hazardous materials to the environment. Any spills or leakages of hazardous materials are reported by the operator and are controlled and removed as necessary in accordance with BLM regulations. The materials spilled or leaked are exempt from federal hazardous materials rules under the Resource Conservation and Recovery Act of 1976.

3.4 RECREATION RESOURCES

Recreation activities available on BLM-administered lands in the planning area are many and varied. A brief listing includes hunting for elk, deer, antelope, and greater sage-grouse; camping, backpacking, and hiking; horsepacking and riding; OHV use; mountain biking; rock and petrified wood collecting; sightseeing of historic trails and places; wild horse viewing; wildlife viewing; and photography. Recreation use in the planning area predominantly occurs between May and October, because lack of maintained roads in the winter restricts year-round recreational access.

Major recreation locations include the Greater Sand Dunes area; Steamboat Mountain; Oregon Buttes; White Mountain Petroglyphs; Honeycomb Buttes; Tri-Territory Marker; and the Oregon, Mormon Pioneer, California, and Pony Express National Historic Trails (Map 2).

Estimated dispersed recreational use within the planning area is summarized in Table 3-21. Recreational use was estimated by using recreational visitor days (RVD) (each RVD defined as a 12-hour period) as a unit of measure. Dispersed recreational uses in the planning area were estimated using data from the BLM Recreational Management Information System (RMIS).

Table 3-21. Estimated Annual Nonconsumptive Recreational Visitor Days

Activity	Total RVDs	Resident RVDs	Nonresident RVDs
OHV	16,691	6,676	10,015
Other Dispersed Uses			
Archery	71	57	14
Backpacking	214	107	107
Bicycling—Mountain	143	71	71
Camping	1,661	830	830
Driving for Pleasure	1,720	1,548	172
Environmental Education	50	5	45
Gather Noncommercial Products	143	114	29
Hiking/Walking/Running	500	250	250
Nature Study	76	46	30
Picnicking	100	50	50
Re-enactment Events/Tours	60	6	54
Rockhounding/Mineral Collection	285	228	57
Target Practice	71	57	14
Viewing Cultural Sites	106	11	95
Viewing Wild Horses	285	171	114
Viewing Wildlife	304	182	122
Viewing—Interpretive Exhibit	528	53	475
Subtotal—Other Dispersed Uses	**6,315**	**3,786**	**2,529**
Total Recreational Visitor Days	**23,006**	**10,462**	**12,544**

BLM tracks recreational use for several areas within Wyoming; however, visitor day estimates are not available specifically for the JMH CAP planning area. Therefore, estimated RVDs were extrapolated from the RMIS database for the Rock Springs Field Office. The RMIS database was queried for the number of RVDs per activity for the Rock Springs Field Office for the time period October 1, 1998, to September 30, 2001. The JMH CAP planning area accounts for 19 percent of the land area under the jurisdiction of the Rock Springs Field Office; as a first estimate, it was assumed that RVDs associated with JMH would account for 19 percent of those recorded within the field office. The estimated RVDs per activity were then modified using information specific to JMH. For example, it was assumed that very little fishing, cross-country skiing, or snowmobile activity occurs in the planning area. In addition, camping RVDs were revised downward given the lack of developed campsites within the JMH CAP planning area. Because this system does not track visitor origin, resident and nonresident visits were based on observations and professional judgment of BLM staff.

The results summarized in Table 3-21 show that OHV use is the most popular recreational activity, accounting for more than 16,000 RVDs per year. In addition, it was estimated that visitors enjoyed approximately 5,400 RVDs associated with other dispersed recreational activities.

3.4.1 Off-Highway Vehicle Use

OHV use is the most popular recreational activity within the planning area. Most of this activity takes place within the Greater Sand Dunes Recreation Area, which carries an “open” OHV designation on 10,020 acres. BLM estimates that an average of 14,000 RVDs occur in this area annually. In addition, OHV recreation occurs in other areas that fall within the “limited” use category. The limited category includes areas limited to existing roads and trails, areas limited to designated roads and trails, areas limited by number and type of vehicle, areas limited to licensed or permitted use, and areas with seasonal limitations. Using the RMIS database for the Rock Springs Field Office, it was estimated that OHV use in other areas of the planning area account for approximately 2,400 RVDs per year.

3.4.2 Hunting

Hunting is the second most popular activity within the planning area and includes elk, antelope, mule deer, greater sage-grouse, morning dove, and rabbits. The seasons of use and limitations are summarized in Table 3-22. Hunting days reported under this section are not comparable with BLM recreation days given the differences in estimation procedures and the definition of a recreation day. Because of the migratory nature of game herds, it is difficult to estimate the total RVDs associated with hunting in the planning area; therefore, total hunting activity estimated by WGFD within hunting units that partially include the planning area were considered.

The *Wyoming Game and Fish Annual Report of Big Game Harvest* and the *Upland Game & Furbearer Harvest Annual Report* published for the last 10 years were used to estimate the average hunting days per species within the planning area. Residents and nonresidents of Wyoming spend approximately 3,100 days hunting in the planning area annually, as summarized in Table 3-23. Wyoming residents dominate hunting use in the planning area, accounting for more than 80 percent of the hunting days on average. Hunting antelope is the most popular hunting activity, with more than 1,300 hunting days, followed by greater sage-grouse, mule deer, and elk.

Table 3-22. Hunting Seasons [2000]*

Species	Hunt Area	Seasons		Limitations
		Opens	Closes	
Antelope	92	9/10	10/14	Limited Quota: 750 licenses to hunt any antelope
		9/10	10/14	Limited Quota: 705 licenses to hunt doe or fawn, valid only in that portion of Area 92 within the Pacific Creek Drainage
		9/10	10/14	Limited Quota: 150 licenses to hunt doe or fawn, valid only in that portion of Area 92 in the Farson-Eden Irrigation Project
	107	9/10	9/30	Limited Quota: 200 licenses to hunt any antelope
		9/10	9/30	Limited Quota: 500 licenses to hunt doe or fawn
		8/20	9/9	Limited Quota: 125 licenses to hunt any antelope; muzzleloading, firearms, and handguns using legal cartridges
	60	9/16	10/14	Limited Quota: 100 licenses to hunt any antelope
		9/16	10/14	Limited Quota: 50 licenses to hunt doe or fawn
	64	9/16	10/14	Limited Quota: 150 licenses to hunt any antelope
		9/16	10/14	Limited Quota: 300 licenses to hunt doe or fawn

*WGFD 2000 Annual Report of Big and Trophy Game Harvest.

Table 3-22. Hunting Seasons [2000]* Continued

Species	Hunt Area	Seasons		Limitations
Mule Deer	95	10/15	10/22	General License; antlered mule deer or any while-tailed deer
	131	10/1	10/8	General License; antlered deer
		11/4	11/12	Limited Quota: 25 licenses to hunt antlerless deer valid only in that portion of Area 131 north of Wyoming Highway 28 and west of the Lower Farson Cut Off Road (Sweetwater County Road 8)
Elk	100	10/15	10/31	Limited Quota: 100 licenses to hunt antlered elk
		10/15	10/31	Limited Quota: 110 licenses to hunt antlerless elk
		10/21	10/31	Limited Quota: 90 licenses to hunt antlerless elk
		10/15	10/31	Limited Quota: 50 licenses to hunt cow or calf valid only in that portion of Area 100 east and north of the Three Forks/Atlantic City Road (BLM Road 2317) and west of the Bison Basin Road (Fremont County and BLM Road 3221)
Greater sage-grouse	1	9/16	10/1	Daily Bag Limit: 3; Possession: 6

*WGFD 2000 Annual Report of Big and Trophy Game Harvest.

Table 3-23. Estimated Annual Average Hunting Days

Hunter Type	Elk[1]	Antelope[2]	Mule Deer[3]	Greater Sage-Grouse[4]
Resident	364	1,486	823	695
Nonresident	97	78	785	185
Total	**461**	**1,565**	**1,609**	**880**

[1] Estimated with data from WGFD Hunt Area 100 (Steamboat); assumed that 70 percent of the hunting within Hunt Area 100 occurred in the JMH CAP planning area.

[2] Estimated with data from WGFD for Hunt Area 92 (Steamboat), 107 (Upper Sweetwater), 60 (Table Rock), and 64 (Bison Basin); assumed that 70 percent of the hunting within Hunt Area 92, 23 percent within Hunt Area 107, 4 percent within Hunt Area 64, and 6 percent within Hunt Area 60 occurred in the JMH CAP planning area.

[3] Estimated with data from WGFD for Hunt Area 131 (Steamboat) and 95 (South Pass); assumed that 60 percent of the hunting within Hunt Area 131 and 13.5 percent within Hunt Area 95 occurred in the JMH CAP planning area.

[4] Estimated with data from WGFD for Hunt Area 7 (Eden) and 8 (Beaver Rim); assumed that 25 percent of the hunting within Hunt Area 7 and 5 percent within Hunt Area 8 occurred in the JMH CAP planning area.

3.4.3 Special Recreational Management Areas

There are two SRMAs within the planning area: (1)Greater Sand Dunes and (2) Oregon, Mormon Pioneer, California, and Pony Express National Historic Trails. These areas are discussed in further detail in Section 3.7, Special Management Areas and Other Management Areas.

3.4.4 Continental Divide National Scenic Trail

The National Trails System Act of 1968 provides for designation and conservation of trails that provide maximum outdoor recreation potential in areas of nationally significant scenic, historic, natural, or cultural qualities. In 1978, as an amendment to the National Scenic Trail System Act, Congress designated the Continental Divide National Scenic Trail (CDNST). This trail route traverses approximately 3,100 miles of the length of the Rocky Mountains, in proximity to the Continental Divide, through the states of Montana, Idaho, Wyoming, Colorado, and New Mexico. The Forest Service published a comprehensive management plan for the trail in 1985 that set broad goals and policy for local trail management.

In 1998, BLM issued an Environmental Assessment for the designation of the proposed on-the-ground route for the trail. The Continental Peak/South Pass Connecting Side Trail (35 miles) was proposed and analyzed. However, designation of the route was deferred pending completion of the JMH Environmental Impact Statement (EIS) to analyze the side trail along with other related resource issues. About 25 miles of existing roads and routes have been identified as a side trail for the CDNST. The remainder of the route would require cross-country travel. This route would partially occur in the South Pass Historic Landscape area (Map 64).

Allowable uses of the Continental Peak/South Pass Connecting Side Trail include hiking, mountain biking, horseback riding, and limited motor vehicle use. Approximately 95 percent of the trail is primitive two-track roads, 4 percent is improved roads, and 1 percent requires cross-country travel. Cross-country segments are closed to motorized vehicles.

3.4.5 Recreation Opportunity Spectrum

The goal of the recreationist is to have satisfying recreational experiences by participating in preferred activities in favorable environmental settings, the goal of the recreation resource manager then becomes to provide opportunities to obtain such experiences. This can be achieved by managing the natural setting and activities through the use of the Recreational Opportunity Spectrum (ROS).

Developed in the late 1970s by the Forest Service, the ROS has proven to be an effective recreation management and inventory tool for both the public and private sectors. In essence, the ROS is a spatial-based inventory system that recognizes the need to maintain a range of recreational opportunities while also providing multiple recreational experiences. Whereas traditional methods of recreational inventories have focused attention on the classification of facilities or types of activities, the ROS instead is a spatially orientated, experience-based inventory system. The key term is “experiences” in that the fundamental assumption is that different kinds of land, or landscapes, can support different kinds of recreational experiences and opportunities.

Operationally, the ROS is a form of zoning in which inventories of lands are arranged along a continuum that is divided into six classes or zones, ranging from natural, low-use areas (resource-dependent recreational opportunities) to highly developed, intensive use areas (facility/vehicle-dependent recreational opportunities). The six classes included within the ROS are primitive, semiprimitive nonmotorized, semiprimitive motorized, roaded natural, rural, and urban. The principal factor in determining an ROS class is the setting. The setting describes the overall outdoor environment of a given area, which ultimately influences the types of opportunities and the experiences that take place within that area. Therefore, to enable the recreational manager to achieve the goal of providing opportunities for satisfying recreational experiences, he or she must provide settings that promote varying types of recreational opportunities. Although some classifications may appear to designate areas with wilderness qualities, they should never be confused with the classification of wilderness areas. Wilderness areas are special, legally designated areas that can cross classes.

The following describes the six classifications of ROS settings and is then followed by a description of the types of experiences that each setting encourages.

3.4.5.1 ROS Setting Characterization

3.4.5.1.1 Primitive

The primitive area is characterized by essentially an unmodified natural environment of fairly large size. Interaction between users is very low and evidence of other users is minimal. The area is managed to be essentially free from evidence of human-induced restrictions and controls. Motorized use within the area is not permitted.

3.4.5.1.2 Semiprimitive Nonmotorized

This area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Interaction between users is low, but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present but are subtle. Motorized use is not permitted.

3.4.5.1.3 Semiprimitive Motorized

This area is characterized by a predominantly natural or natural-appearing environment of moderate to large size. Concentration of users is low but there is often evidence of other users. The area is managed in such a way that minimum onsite controls and restrictions may be present but are subtle. Motorized use is permitted.

3.4.5.1.4 Roaded Natural

The roaded natural area is characterized by a predominantly natural appearing environment with moderate evidence of the sights and sounds of man. Such evidence usually harmonizes with the natural environment. Interaction between users may be low to moderate, but with evidence of other users prevalent. Resources modification and utilization practices are evident, but harmonize with the natural environment. Conventional motorized use is provided for in construction standards and design of facilities.

3.4.5.1.5 Rural

The rural area is characterized by a substantially modified natural environment. Resource modification and utilization practices are to enhance specific recreation activities and to maintain vegetative cover and soil. Sights and sounds of humans are readily evident, and the interaction between users is often moderate to high. A considerable number of facilities are designed for use by a large number of people. Facilities are often provided for special activities. Moderate densities are provided far away from developed sites. Facilities for intensified motorized use and parking are available.

3.4.5.1.6 Urban

The urban area is characterized by a substantially urbanized environment, although the background may have natural appearing elements. Renewable resource modification and utilization practices are to enhance specific recreation activities. Vegetative cover is often exotic and manicured. Sights and sounds of humans onsite are predominant. Large numbers of users can be expected, both onsite and in nearby areas. Facilities for highly intensified motor use and parking are available with forms of mass transit often available to carry people throughout the site.

3.4.5.2 ROS Experience Characterization

3.4.5.2.1 Primitive

Extremely high probability of experiencing isolation from the sights and sounds of human, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers a high degree of challenge and risk.

3.4.5.2.2 Semiprimitive Nonmotorized

High, but not extremely high, probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk.

3.4.5.2.3 Semiprimitive Motorized

Moderate probability of experiencing isolation from the sights and sounds of humans, independence, closeness to nature, tranquility, and self-reliance through the application of woodsman and outdoor skills in an environment that offers challenge and risk. There is opportunity to have a high degree of interaction with the natural environment. There is opportunity to use motorized equipment while in the area.

3.4.5.2.4 Roaded Natural

About equal probability of experiencing affiliation with other user groups for isolation from sights and sound of humans. There is opportunity to have a high degree of interaction with the natural environment. Challenge and risk opportunities associated with more primitive types of recreation are not very important. Practice and testing of outdoor skills might be important. Opportunities for both motorized and non-motorized forms of recreation are possible.

3.4.5.2.5 Rural

Probability of experiencing affiliation with individuals and groups prevalent, as is the convenience of sites and opportunities. These factors are generally more important than the setting of the physical environment. Opportunities for wildland challenges, risk-taking, and testing of outdoor skills are generally unimportant except for specific activities like downhill skiing, for which challenge and risk-taking are important elements.

3.4.5.2.6 Urban

Probability of experiencing affiliation with individuals and groups is prevalent, as is the convenience of sites and opportunities. Experiencing natural environments, having challenges and risks afforded by the natural environment, and using outdoor skills are relatively unimportant. Opportunities for competitive and spectator sports and for passive uses of highly human-influenced parks and open spaces are common.

Within the Jack Morrow Hills planning area, ROS classifications include semiprimitive nonmotorized, semiprimitive motorized, roaded natural, and rural (Map 72).

3.5 MINERALS AND ALTERNATIVE ENERGY RESOURCES

3.5.1 Regional Geologic Setting

The planning area falls within a broad region of subdued relief that has been termed the Wyoming Basin physiographic province (Fenneman 1931). The Greater Green River Basin lies within this province, and the planning area lies in the north-central part of this basin (Figure 1). The planning area includes the north end of the Rock Springs Uplift, extends east into the Great Divide Basin, west into the main part of the Green River Basin, and northward across the southern end of the Wind River Range. Surface features reflect erosion by wind and water in an arid, cold temperature environment. Landforms in portions of the planning area have been modified by sand movement, faulting, and volcanic activity. Figure 2 lists formations present in the planning area and gives a brief lithologic description of each unit.

Precambrian era rocks in the planning area include outcrops of granitic rock in the Wind River Range (dated at 2.6 billion years) and metamorphic rocks that may be more than 3 billion years old. Precambrian rocks are the deepest buried rocks in the planning area, forming the crystalline basement, and are also found near the surface in the area to the north of the thrust fault bounding the Wind River Range.

For most of the Paleozoic era, the planning area was covered by shallow seas at the eastern margin of a marine basin. The area was also close to the equator and was frequently covered by warm shallow seas where limestone and fine-grained sediments were deposited. Mississippian and Permian age strata were deposited in the area during this time, including the Madison Limestone and the Phosphoria Formation. These units do not outcrop in the planning area, as they are buried under younger sedimentary rocks. The Phosphoria Formation is exposed west of the planning area and has been mined for phosphate minerals in districts along the Wyoming-Utah border and in central Idaho. The Phosphoria Formation has not been considered for mining in the Green River Basin because of the depth of occurrence and related costs that would be required to mine phosphate. The Phosphoria Formation also contains significant organic matter, and this unit may also be a source for oil and gas accumulations in southwest Wyoming. Madison Limestone well tests in the area have yielded carbon dioxide-rich gas.

Most of the Mesozoic era rocks within the planning area were deposited in a northern subtropical region. Sea level fluctuated during this period because of periods of eastward fault movement in the Thrust Belt and mountain-building events in surrounding areas. Deposition of sediment took place in alternating marine and nonmarine environments. At the end of the Mesozoic era, mountain building caused the complete withdrawal of the sea, and the North American continent was approaching its present-day latitudes.

Most of the Mesozoic sequence is composed of Cretaceous-age strata, including the Dakota Sandstone, Frontier Formation, Baxter Shale, Mesaverde Group, Lewis Shale, and Lance Formation. The Baxter Shale is a thick marine shale with lenses of fine-grained sandstone. The Mesaverde Group includes marginal marine and nonmarine deposits of the Blair Formation, Rock Springs Formation, Ericson Sandstone, and Almond Formation. The Rock Springs and Almond Formations contain significant coal seams; however, most of the coal beds in Cretaceous rocks in the planning area are at depths below practical limits for mining. The uppermost part of the Cretaceous section is composed of the Lewis Shale and the embedded sandstone and shale of the Lance Formation, which also contains thin coal seams.

At the onset of the Cenozoic era, the Thrust Belt was in a late stage of development, and the ancestral structures of the Uinta Mountains, Wind River Range, Sierra Madre Range, and Granite Mountains had formed on the margins of the Green River, Great Divide, and Washakie Basins (Figure 1). These basinal areas were then largely filled with river and lake deposits, nearly burying the surrounding mountain ranges. The lake deposits and other nonmarine strata formed the Fort Union, Wasatch, and Green River formations. The Fort Union and Wasatch formations are both coal bearing, and the Green River Formation contains oil shale. Coal is mined south of the planning area at the surface and in underground mines, but Tertiary coal resources have not been economically viable for mining in the planning area.

3.5.2 Present-Day Land Forms

During the late Tertiary and Quaternary periods, uplift of the region continued, and igneous activity approximately 1.1 million years ago resulted in the formation of lava flows, volcanic necks, and cinder cones. The igneous rocks are resistant to erosion and have resulted in some of the prominent landforms in the area, including Boars Tusk, Steamboat Mountain, and the Leucite Hills. The rocks are potassium rich and were mined as a source of potassium at nearby Zirkel Mesa during World War I.

The widespread erosion that has shaped the planning area has resulted in the development of considerable areas of badlands. The main area of badlands is within the Honeycomb Buttes and Oregon Buttes WSAs. Badlands are best developed in soft, weak mudstones, which are relatively impervious and preclude infiltration of rainwater. As a result, runoff erodes intricate networks of rills and gullies. As the gullies deepen, the ground surface becomes highly dissected. Erosion and aerial deposition have produced sand dunes in other parts of the planning area. Dune activity ranges from active migration with loose sand present at the ground surface to stabilized dunes that are vegetated and not migrating. Other surficial deposits include alluvium in stream valleys and debris and landslide deposits along steep slopes in the area. These deposits have been weathered to produce the soils present across most of the planning area. Where the water table is present in these surficial deposits, they form the uppermost aquifer in the planning area.

3.5.3 Geologic Hazards

Several types of geologic hazards are present within the planning area (Map 66). Hydrogen sulfide, earthquakes, landslides, and windblown sand hazards are of primary concern. Hydrogen sulfide is present with the hydrocarbons in some deep producing oil and gas wells farther south on the Rock Springs Uplift and could be present in the planning area in formations deeper than those that presently produce hydrocarbons. Additional discussion of this hazard is on file in the Rock Springs Field Office (USDI 1992).

The only significant fault that demonstrates recent displacement is the Continental Fault area on the north perimeter of the planning area. Historical seismicity shows no major earthquakes within the planning area; however, earthquakes in adjacent regions may directly affect this area. Hazard assessments including seismic modeling have ranked the planning area as having the potential for ground movement at 4 to 8 percent of the acceleration because of gravity. This is a relatively moderate ground motion risk; the highest classification in the continental United States is up to 32 percent of the acceleration because of gravity.

Active landslides are relatively scarce in the planning area because of the relatively arid climatic conditions and the competent rocks underlying most steep slopes. The area of steep slopes around Steamboat Mountain and Oregon Buttes has the most potential for landslides or rock falls. These areas have been impacted by past landslides and are susceptible to development of unstable slope conditions where the ground surface is disturbed. The areas that are vulnerable to earth movement are shown on the map of potential landslide areas (Map 66).

Windblown sand deposits occur throughout the southern part of the planning area. The Killpecker Dune field encompasses about 170 square miles, extending beyond the planning area boundary. Prevailing wind direction is from the west-northwest, and dune migration follows prevailing winds. Hazards are increased when dunes are migrating. No volcanic hazards exist within the area (Wright and Pierson 1992).

Several mappable faults occur in the planning area. The Continental Fault is approximately 55 miles long and roughly parallels the buried thrust fault (Wind River thrust fault) at the north edge of the planning area (Figure 1).

3.5.4 Leasable Minerals

Fluid minerals such as oil and gas are leased under the Mineral Leasing Act of 1920 and its amendments of 1987. Leases are offered by competitive bid. Leases within the planning area include stipulations to mitigate impacts of development on wildlife, including seasonal restrictions on drilling activity. Other lease stipulations include restrictions on surface disturbances, wildlife, special resources (i.e., recreational areas and historic features), and no surface occupancy requirements. The purpose of these stipulations is to protect the environment and to inform the lessee about special requirements that may restrict development. Additional information about wells that have produced can be found in the Hydrocarbon Occurrence and Development Potential Report (Appendix 13). Methods and procedures for conducting geophysical exploration leasing, well permitting, drilling operations, development, production, and subsurface practices are described in Appendix 14.

3.5.4.1 Oil and Gas

Oil and natural gas are fluid minerals available for lease within the planning area (Map 67).

3.5.4.1.1 Historical and Current Production

Between 1900 and 1916, a number of shallow oil exploration wells were drilled on the Rock Springs Uplift. A number of oil and gas shows were encountered, but no wells were productive. The first production in the region occurred with the discovery of the South Baxter Basin field in August 1922. Exploration continued in the JMH CAP planning area, and the first producing well in the planning area was drilled in 1961. This Frontier Formation well was the discovery well for the Nitchie Gulch Field. Development of Nitchie Gulch and other producing units occurred through the early 1990s. Petroleum exploration and development is active in the Greater Green River Basin, and there is interest in additional development in the planning area. Through July 2001 there have been 153 wells drilled in the planning area. The well locations, unit designations, depths, and deepest formation tested for each well are listed in Table 3-24 at the end of Chapter 3.

Five active producing units have been designated in the planning area: Buccaneer, Nitchie Gulch, Rim Rock, Steamboat Mountain, and Treasure units (Map 68). Three exploratory units have been designated in the planning area (Map 68). The Gold Coast Exploratory Unit was approved effective January 30, 1998. The first well commenced drilling in the fall of 1998 and is temporarily shut in. The Johnson Gap Exploratory Unit was approved effective February 2, 1994. The West 187 Exploratory Unit was approved effective February 25, 1998. Development of these exploratory units has been deferred until management actions for the JMH CAP planning area are selected.

Three exploratory units that were partially within the planning area were approved, and exploration wells were drilled outside the planning area in the 1990s. The Riva Exploratory Unit extended across the eastern boundary of the planning area; the Lewis Shale was tested and abandoned in this unit. The Encore Exploratory Unit extended into the southeast part of the planning area. This unit was terminated in 1998 after an exploration well was tested in the Almond Formation, Lewis Shale, and Ericson Sandstone. The Jade Exploratory Unit extended into the eastern part of the planning area and was tested in the Almond Formation and the Lewis Shale.

All other units listed in Table A13-1 originally were part of exploratory unit proposals that were later terminated because economic quantities of oil and gas were not discovered. The large number of producing units and exploratory unit wells drilled in the planning area shows that unitization has been a popular method for exploration and orderly development.

Five producing units are classified by the Wyoming Oil and Gas Conservation Commission as “fields.” The limits of these fields may extend beyond the unit boundaries. Other fields in the planning area are Pine Canyon Field south from the edge of the planning area, Essex Mountain and unnamed fields, and the abandoned Freighter Gap and Saddle Bag fields. In addition three other wells have been completed as coalbed gas wells but have not generated production in an unnamed field. The wells in each of these fields are listed in Table A13-1.

All fields in the planning area are developed over stratigraphic traps and produce gas and occasionally some oil or condensate from the lower Cretaceous Frontier, Dakota, and Mowry formations. Only four other productive wells have been drilled, all in the upper Cretaceous section. Three of these were coalbed gas wells completed in the Mesaverde Group, and one oil well was completed in the Rock Springs Formation. A number of other younger Tertiary formations and older Mesozoic and Paleozoic age formations produce oil and gas outside the planning area in other parts of the Greater Green River Basin.

3.5.4.1.2 Undeveloped Reserves

Oil and gas development potential (Map 69) was determined for the Green River Final EIS RMP (USDI 1996) by geologic analysis of data from United States Geologic Survey publications and databases and a survey of industry interest in development within the planning area. The map has been updated to show increased potential for development based on the drilling of a well with a significant show of gas just outside the northwest boundary of the planning area. The area of high potential for oil and gas development has been extended north from areas of existing production to the northwest part of the planning area based on the results of exploration activity in 2001 and 2002. Resource estimates, potential recovery rates, and possible development scenarios are evaluated in the Hydrocarbon Occurrence and Development Potential Report (Appendix 13) that has been prepared for the planning area.

3.5.4.1.3 Existing Facilities

An extensive natural gas transmission system now exists in Wyoming and the Rocky Mountain region. Gathering lines and compression stations within the planning area are used to deliver gas to regional transmission pipelines. Most producers sell gas directly to local gas distribution companies, with the pipeline acting as a "common carrier" of natural gas.

3.5.4.2 Coal and Coalbed Gas

The southern part of the planning area is within the Coal Occurrence and Development Potential area. The focus of this designation is on the late Cretaceous and early Tertiary coal-bearing formations around the Rock Springs Uplift. Current information indicates that significant coal-bearing formations are present in the planning area. However, the depth to reach these formations and the thickness of the seams within the formations reduce the economic viability of mining. Map 56 shows the area with coal development potential that has been identified in the planning area. Coalbeds in this area are buried by overlying sediments. Exploration drilling data in this area indicate numerous coal seams, with thickness ranging from 0.3 to 8 feet at depths from 8 to 428 feet. One notable coalbed ranges in thickness from 3 to 8 feet and occurs at depths ranging from 11 to 283 feet in depth.

Presently there are no coal operations within the planning area boundary. Coal seams with sufficient thickness and suitable overburden ratios are present south of the planning area to support active mining. It is anticipated that future coal development in this part of Wyoming would focus on the extension of existing mining activities to develop additional resources. These resources would be economically favorable over coal mining within the JMH boundaries.

Potential for the occurrence of Tertiary coalbed gas and the occurrence of Upper Cretaceous coalbed gas were determined by Stilwell (1991) for the Green River RMP (1996). New information obtained while preparing this EIS caused modification of the area development potential for coalbed gas (Map 70). Information provided by the Wyoming Geological Survey was used to identify coalbed gas potential areas based on the occurrence and distribution of coal seams in Cretaceous and Tertiary formations in the planning area.

3.5.4.3 Sodium

The planning area is not within any known sodium leasing area. Sodium brines exist in the Wilkins Peak Member of the Green River Formation near Eden and are open to exploration and consideration for leasing and development. However, previous efforts to process the brines for marketable commodities have not proved economically viable, and extensive trona resources are actively mined outside the planning area in other parts of the Green River Basin.

3.5.4.4 Oil Shale

Deposits of oil shale are known to occur in the Tipton, Wilkins Peak, and Laney members of the Green River Formation. The western part of the planning area officially has been classified as prospectively valuable for oil shale. This classification indicates that oil shale has priority for mineral resource development and that this area has been withdrawn from location of mining claims for other minerals under the Mining Act of 1872. However, development of oil shale has not proved economically viable, and there has been no interest in leasing oil shale resources in the planning area since the mid 1980s.

3.5.4.5 Potash

The Leucite Hills, including Boars Tusk and Steamboat Mountain, are known to contain potash. Schultz and Cross (1912) estimated that approximately 10 percent of more than 206 million tons of rock at Steamboat Mountain was potash. Boars Tusk was estimated to contain 2.9 million tons of potash. Potash was mined during World War I by the Liberty Potash Company on Zirkel Mesa, located south of the planning area. Potassium chloride was processed in a plant in Green River for fertilizer (Hausel, Sutherland, and Gregory 1995). Other sources of potash have been successfully developed in other areas where this commodity can be produced at lower costs than potash resources in the planning area. Based on these economic factors, potash mineral development is not anticipated in the planning area.

3.5.5 Salable Minerals

Salable minerals are those materials such as sand, gravel, and construction material that are sold or permitted under the Mineral Materials Sale Act of 1947.

3.5.5.1 Sand and Gravel

Lands open to development of salable minerals within the planning area lack good quality construction material, except for Steamboat Mountain, which is capped by volcanic lava. The South Pass Historic Landscape, Sweetwater River plus one quarter-mile buffer, and the Sand Dunes contain quality construction materials. However, the Green River RMP (USDI 1997) prohibits development of salable minerals in these areas.

Nearly all material used for construction and maintenance of constructed gravel and paved roads comes from outside the planning area. The exception is a Wyoming Transportation Department borrow site along Wyoming Highway 28. Approximately four acres of disturbance has occurred at this site.

3.5.5.2 Clay

The Cretaceous Lance Formation, Lewis Shale, and Mesaverde Group may contain clays and shales suitable for use in the manufacturing of structural clay products (Construction Materials Survey 1965). Potential products include brick tile, sewer pipe, and other items used in construction. Little testing of these clays and shales has been conducted. The sediments containing the potentially usable clays occur in the southern portion of the planning area. The scarcity of water supplies and lack of infrastructure in this part of the planning area would probably make clay mining and related manufacturing uneconomic.

3.5.6 Locatable Minerals

Locatable minerals are those that can be located and claimed under the Mining Act of 1872, including gold, diamonds, and uranium. Mining for these minerals requires staking a claim rather than receiving a lease issuance. In special management areas, a plan of operations is required for all mining activities. The plan of operations must describe surface disturbing activities, provide for mitigation of impacts to other resources, and provide for reclamation of surface disturbances. Outside of special management areas, plans of operation are required where mining activities disturb more than 5 acres of land. Casual use mining does not require a plan of operations for mining activity that does not use motorized equipment or powered hydraulic mining in streambeds.

3.5.6.1 Gold

Historically gold has been the primary locatable mineral explored for in the planning area. At present, active mining claims are located east of Dickie Springs, south of the Sweetwater River, and northwest of Honeycomb Buttes (USDI 1997). These claims are placer claims except for one lode claim on the pre-Cambrian outcrop in Section 4, Township 27 North, Range 100 West. Active mining claims are those that have been properly recorded, have annual filings completed for the current year, and may or may not have exploration and/or mining operations in progress (Map 71).

In the recent past, a few claims have been explored by trenching with a backhoe, but most exploration is done with pick and shovel. One notable exception is a small-scale trommel operation that is run by claimants in their free time. Weather restricts activity to the snow-free months, generally from May to mid-November. Current exploration activity disturbs less than 5 acres and is reflective of the amount of activity seen in the area since the placers were first worked in 1863.

Reconnaissance investigations of placer gold deposits in the northern part of the planning area have indicated that a significant quantity of gold may be present in the area, and it has been estimated that more than 28 million troy ounces of gold may be present in the Dickie Springs and Oregon Gulch areas. Later investigations have determined that the placer gold deposits are restricted to a thin stratigraphic zone approximately 1 foot thick within the gold-bearing sequence of sedimentary deposits. In addition, the lateral extent and continuity of the gold-bearing zone has not been determined. The initial resource estimate assumed that the gold is present throughout the thickness of the host sand and gravel deposits. The restricted vertical section of gold-bearing material revealed by detailed sampling at discrete depth intervals indicates that the actual resource in the area may be significantly less than previously estimated. However, other resources in addition to placer deposits may be present in the planning area, such as lode deposits that were the source material for the placer gold in the Dickie Springs and Oregon Gulch areas. Because of the large uncertainties associated with these potential resources, a reliable quantitative estimate of gold resources cannot be provided for the planning area.

3.5.6.2 Diamonds

Diamonds could potentially occur in association with the Quaternary volcanic rocks (lamproites) found in the southern part of the planning area (Hausel et al. 1995, 1997). Although no diamonds have ever been recovered from these lamproites, they exhibit characteristics similar to diamond-bearing lamproites found in Arkansas, Western Australia, and India. Additional exploration is needed to further define these structures and to search for diamonds. Detailed petrographic and geochemical analyses and evaluation of larger sample volumes will be necessary to determine the presence of diamonds in this rock type.

3.5.6.3 Uranium

Wyoming has been a major producer of uranium in the United States (Harris and King 1993). Harris and King report that uranium mineralization is widespread in Wyoming. Large deposits of uranium occur outside the planning area in several districts. In the northern part of the planning area, the U.S. Geological Survey (Patterson et al. 1987) reports the occurrence of uranium within coalbeds of the Wasatch Formation (Tertiary) and possible deposits within the conglomeratic lenses of the Cathedral Bluffs Tongue of the Wasatch Formation. Uranium exploration has occurred on claims staked in the northern part of the planning area and south of the planning area around the Rock Springs Uplift. These claims targeted the Rock Springs Formation and/or Ericson Formation of the Cretaceous Mesaverde Group. Based on results of previous exploration activity, the potential for development of uranium within the planning area is very low.

3.5.7 Alternative Energy Resources

Alternative energy resources include development of wind power and solar power.

3.5.7.1 Wind

The Wind Energy Resource Atlas of the United States (Pacific Northwest Laboratory 1986) provides wind power classifications on a regional basis. The planning area is generally within wind power class 6 (ranging from 1 to 7), with wind power densities of 300 to 400 watts per square meter. These data indicate that some locations within the planning area may be suitable for wind power development provided that suitable topographic locations could be developed and that access to the power grid and transmission line ROWs could be developed. However, interest in developing wind power facilities within the planning area has not been expressed to date.

3.5.7.2 Solar

The University of Oregon maintains a series of solar power research stations throughout the northwestern United States, including a station located at Green River, Wyoming (http://solardat.uoregon.edu/). Data from this station indicate that average daily photovoltaic cell output measured in kilowatt-hours per square meter per day range from 3.21 in January to 8.18 in June, based on data collected from 1994 to 2000. These data indicate that the area has some development potential for solar power conversion to electricity. Development of solar power facilities would depend on accessibility to suitable locations and ROW access to power distribution lines, along with technological developments to decrease the costs and increase the efficiencies of photovoltaic cells. However, interest in developing solar power facilities within the planning area has not been expressed to date.

3.6 VISUAL RESOURCES

Visual resources include the physical (natural and artificial) and biological features of the landscape that contribute to the scenic quality of an area. Scenic quality is a measure of the visual appeal of the landscape and is perhaps best described as the overall impression retained after driving through, walking through, or flying over an area. Although relative values can be used to evaluate scenic quality, visual appeal is subjective and can vary among observers.

3.6.1 Visual Resource Inventory

Scenic value is one of the resources for which public lands are to be managed in accordance with FLPMA. BLM manages this resource by determining visual values through a resource inventory process. The inventory consists of a scenic quality evaluation, sensitivity level analysis, and distance zones mapping.

Visual resources are best described using the physiographic provinces, which are large-scale geographical units of land. The scenic quality is evaluated against seven factors or common characteristics within the province: landform, vegetation, water, color, adjacent scenery, scarcity, and cultural modifications. The physiographic province helps establish a frame of reference with which to classify the relative scenic quality. Areas with more variety and harmonious composition tend to have greater scenic value.

The JMH CAP planning area lies mostly within the Wyoming Basin physiographic province. The landscape within the Wyoming Basin province is varied and characterized by highly erodible soils and multicolored, horizontally layered sedimentary bedrock. Colorful badlands landscapes are common throughout the planning area and are interspersed with low rolling or flat-topped hills. Low precipitation levels and localized occurrence of surface water provides for the following distinct vegetative communities: riparian vegetation found along perennial streams, intermittent surface water locations, and rivers; sparse vegetation located on well-drained soils of side slopes and hillsides; and alkaline vegetation in localized areas where evaporation rates exceed the volume of infiltrating surface water.

Scenic quality includes cultural modifications, which are artificial (human-made) changes to the land, water, or vegetation, or the addition of a structure that creates visual contrast to the natural character of the landscape. Cultural modifications within the physiographic province are primarily associated with oil and gas production (such as well facilities, pipelines, roads, and power distribution lines) and with livestock grazing operations (such as fences and water developments).

Evaluation of visual resources also considers sensitivity levels or measures of public concern for the maintenance of scenic quality. Sensitivity factors include type of user, amount of use, public interest, adjacent land use, and special management areas.

Scenic quality can also depend on sight distances. Landscapes are divided into distance zones based on relative visibility from travel routes or observation points. These zones are foreground-middle ground, background, and seldom seen. Distance zones are used to adjust visual classes in areas of overlapping resource uses. Foreground-middle ground zones are more visible to the observer and are more sensitive to change.

Lands are placed into one of four visual resource inventory classes. These classes represent the relative value of the visual resource as determined through the inventory process. Inventory Class I and Class II are the most valued, and Class III and Class IV represent moderate value and least value, respectively. Class I is assigned to areas where a management decision was made to maintain a natural landscape. The other classes are based on the combination of scenic quality, sensitivity level, and distance zones.

3.6.2 Visual Resource Management

The visual resource classes serve as a management tool in making land use decisions. Visual Resource Management (VRM) classes (I, II, III, IV) set standards for planning, designing, and evaluating projects by identifying various permissible levels of landscape alteration while protecting overall regional scenic quality. Management objectives for the classes are presented in Table 3-25.

Table 3-25. Visual Resource Management Class Objectives

Class	Objective
I	Existing character of the landscape should be preserved. Natural ecological changes should be provided for (does not preclude very limited management activity). Level of change to characteristic landscape should be very low and must not attract attention.
II	Existing character of the landscape should be retained. Level of change to characteristic landscape should be low. Management activities may be seen but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in predominant natural features of the characteristic landscape.
III	Existing character of the landscape should be partially retained. Level of change to characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of characteristic landscape.
IV	Management activities that require major modifications of the existing character of the landscape should be provided for. Level of change to characteristic landscape can be high. Management activities may dominate the view and be the major focus of viewer attention. Minimize the impact of activities through careful location, minimal disturbance, and repeating the basic elements.

The VRM classes in the JMH CAP planning area are shown on Map 13. WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. VRM Class II areas include the southern portion of Steamboat Mountain ACEC, Greater Sand Dunes ACEC, South Pass Historic Landscape ACEC, White Mountain Petroglyphs ACEC, and areas adjacent to the WSAs. Land areas included in VRM Class III include the northern portion of Steamboat Mountain ACEC, the northern portion of the White Mountains (Petroglyphs area), Split Rock, Eden Valley, and the western part of the Red Desert watershed area. The remainder of the JMH CAP planning area is classified as VRM Class IV.

3.7 SPECIAL MANAGEMENT AREAS AND OTHER MANAGEMENT AREAS

A special management area is any area where an authorized officer has determined resources require special management and control measures for their protection. Special management areas within the JMH CAP planning area include WSAs, ACECs, SRMAs, and other areas such as watershed areas (Map 14).

3.7.1 Special Management Areas

3.7.1.1 Wilderness Study Areas

WSAs are roadless areas that have been inventoried and found to have wilderness characteristics as defined in Section 2(c) of the Wilderness Act of 1964. These characteristics require an area to generally appear in a natural state and be substantially unaffected by the actions of humans. The area should encompass at least 5,000 acres to make practicable its preservation and to offer opportunities for solitude or a primitive and unconfined type of recreation. Although not a required characteristic, the area may also contain ecological, geological, or other features of scientific, educational, scenic, or historic value.

Section 603 of FLPMA directed BLM to inventory, study, and recommend to Congress by 1991, through the Secretary of the Interior and the President, public lands suitable or unsuitable for wilderness designation. BLM lands in the Green River Resource Management Area were inventoried for wilderness characteristics, and 13 areas were evaluated in the Final Rock Springs Wilderness EIS for suitability as WSAs (USDI 1990). Within the JMH CAP planning area, seven WSAs were determined to meet wilderness characteristics: Buffalo Hump, Sand Dunes, Alkali Draw, South Pinnacles, White Horse Creek, Oregon Buttes, and Honeycomb Buttes (Map 14). Table 3-26 outlines the results of these determinations.

Table 3-26. Wilderness Study Area Determinations

WSA	Wilderness Criteria Met (acres)	Suitable for Designation (acres)	Unsuitable for Designation (acres)
Buffalo Hump	10,300	6,080	4,220
Sand Dunes	27,109	21,304	5,805
Alkali Draw	16,990	0	16,990
South Pinnacles	10,800	0	10,800
Honeycomb Buttes	41,404	37,287	4,117
Oregon Buttes	5,700	5,700	0
Whitehorse Creek	4,002	0	4,002
Total[1]	**116,305**	**70,371**	**45,934**

Source: Final Rock Springs Wilderness Environmental Impact Statement, 1990.
[1]Total acres vary from GIS files.

The BLM Interim Management Policy and Guidelines for Lands Under Wilderness Review provides direction for managing the WSAs so as not to impair their suitability for designation as wilderness, subject to valid existing rights. Permissible activities under interim management guidelines are temporary uses that create no new surface disturbance nor involve permanent placement of structures. Temporary, nondisturbing activities, as well as activities governed by valid existing rights, may generally continue in WSAs.

Only Congress can designate areas as wilderness or release from interim management the areas that were placed under wilderness study. All wilderness recommendations within the JMH CAP planning area are pending congressional decision.

3.7.1.1.1 Buffalo Hump

Buffalo Hump WSA has no private or state inholdings. The primary topographic relief consists of sand valleys, blowouts, hills, and dunes with individual dunes exceeding heights of 100 feet. The interdunal areas contain ponds, grass-covered marshes, and playas. The WSA exhibits a natural condition of undisturbed sagebrush-grassland ecosystem intermingled with active sand dunes. The recreation values are outstanding, with opportunities for hiking, backpacking, nature study, photography, hunting, and rockhounding.

3.7.1.1.2 Sand Dunes

Sand Dunes WSA comprises a large part of the Killpecker Sand Dunes and contains large areas of barren active dunes, wet meadows, greasewood, big sagebrush, and rabbit brush communities. A unique feature of the WSA is the Aeolian ice-cells that feed pools at the base of many of the large sand dunes. The naturalness of this WSA is considered exceptional because of the lack of humanmade intrusions. The flowing dunes virtually eliminate any evidence of human activity in the area. The Steamboat elk herd uses this area.

3.7.1.1.3 Alkali Draw

Alkali Draw WSA contains a remnant of the Great Divide Basin-Red Desert area. A series of draws or canyons extend through the WSA, creating a “washboard” topographic effect. Alkali Rim dominates the southern aspect and exhibits colorful blue rock escarpments. Big sagebrush is the dominant vegetation community, with greasewood common along the major drainages. The WSA contains habitat for mule deer and elk. The WSA is in a natural condition, and the humanmade intrusions are substantially unnoticeable and undergoing natural revegetation. However, the value of the area for oil and gas production and the degree of the wilderness values made the WSA unsuitable for wilderness designation.

3.7.1.1.4 South Pinnacles

South Pinnacles WSA contains mostly flat topography with an exposure of broken rim rocks and ridges. Greasewood communities occupy the draws, with big sagebrush in the open areas. The WSA is natural in character and provides opportunities for solitude and varied recreation. However, the potential for gas production and the manageability of the area made the WSA unsuitable for wilderness designation.

3.7.1.1.5 Honeycomb Buttes

Honeycomb Buttes WSA contains several terrain types, ranging from sagebrush hills and greasewood flats surrounding the badlands to eroding buttes, colored bluffs, and side canyons. This area is one of the best examples of badlands topography in the state and of fossil- and fossil cast-bearing formation in the region. These highly colorful and rugged desert badlands provide outstanding opportunities for solitude. The WSA is natural in character and relatively free of human activities because of the severe topography of the area.

3.7.1.1.6 Oregon Buttes

Oregon Buttes WSA contains no private or state inholdings. The buttes are a prominent feature rising out of the Red Desert, with historical significance as the major landmark for travelers of the Oregon Trail. Resources of the area consist of limber pine stands, small aspen stands, prime raptor habitat, and valuable big game habitat. Visibility from the buttes extends for miles and provides scenic vistas of the mountain ranges to the north and south. The WSA is in a natural state and provides outstanding recreation opportunities for birdwatchers and photographers.

3.7.1.1.7 Whitehorse Creek

Whitehorse Creek WSA contains no private or state inholdings. A large portion of the area contains eroding red, green, and gray buttes. The area supports various habitats and landscapes, including aspen and limber pine stands, sheer sandstone cliffs, and badland topography. The WSA contains important raptor habitat. Opportunities for solitude and primitive recreation are high in areas of the WSA where large escarpments and buttes are located. The potential for gas production and the manageability of OHV use in the portion of the area with little topographic relief contributed to the determination of unsuitability for wilderness designation for this WSA.

3.7.1.2 Areas of Critical Environmental Concern

ACECs are areas of BLM-administered lands where special management attention is needed to protect and prevent irreparable damage to important resources. To be designated an ACEC, the area must meet the criteria of relevance and importance (43 CFR §1610.7-2 and BLM Manual 1613). Areas meeting the relevance criterion possess significant historic, cultural, or scenic values; fish or wildlife resources including T&E species; or natural hazards. To meet the importance criterion, the resource must have substantial significance and value. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause for concern. A natural hazard can be important if it is a significant threat to human life or property.

There are five ACECs within the JMH CAP planning area: Greater Sand Dunes, Oregon Buttes, South Pass Historic Landscape, Steamboat Mountain, and White Mountain Petroglyphs (Map 14). Another ACEC within the Green River Resource Management Area, the Special Status Plant Species ACEC, does not currently contain acreage within the JMH CAP planning area; however, there is potential for other sensitive species within the planning area to be added.

3.7.1.2.1 Greater Sand Dunes

The Greater Sand Dunes ACEC met the relevance and importance criteria in 1982 for outstanding geologic features, prehistoric and historic values of national significance, and recreation values of regional and national importance. Management objectives preserve and protect the integrity of these unique values in the area for future public use and enjoyment. The ACEC is unique to the Wyoming Basin and contains values that are “geologically, aesthetically, and biologically interesting” (McGrew et al. 1974).

The Greater Sand Dunes are part of the larger Killpecker dune field, the largest active dune field in North America. The Killpecker dune field encompasses approximately 109,000 acres, extending 55 miles east from the Green River Basin across the Continental Divide into the Great Divide Basin. The ACEC comprises approximately 41,600 acres (approximately 38 percent of the Killpecker dune field). Boars Tusk, a remnant volcanic neck, is an unusual geologic feature that lies within the Greater Sand Dunes ACEC.

The dunes within the Greater Sand Dunes ACEC help to support the Steamboat elk herd known to occupy this unique desert habitat. Elk occupy the area during the spring and fall, using dunal ponds (flockets) as a source of water. The dunal ponds generally are not as alkaline as other water sources in the area and are known to provide an oasis for plants and animals. The dunal ponds also provide excellent habitat for waterfowl, amphibians, songbirds, and small mammals.

The western portion of Greater Sand Dunes ACEC encompasses some of the Sand Dunes and Buffalo Hump WSAs. These WSAs are managed under the BLM Interim Management Policy for Lands Under Wilderness Review (BLM Manual H-8550-1), as discussed above. The eastern portion of Greater Sand Dunes ACEC incorporates the boundary of the Greater Sand Dunes SRMA, which offers outstanding motorized and nonmotorized recreational values. The historic Crookston Ranch is also located within the ACEC.

3.7.1.2.2 Oregon Buttes

Oregon Buttes ACEC was designated in 1982 to protect its scenic integrity as a historic landmark and to protect the significant wildlife values found in the area. The ACEC lies on a structural platform that joins the Rock Springs Uplift to the Wind River Mountain Range (Zeller and Stephens 1969). At Oregon Buttes, the Continental Divide splits into east and west rims, which rejoin at Bridgers' Pass, south of Rawlins, and encloses an area known as the Great Divide Basin.

The Buttes are a dominating landform and were often noted by emigrants using the Oregon Trail, marking the halfway point in their journey from Independence, Missouri, to the Pacific Ocean. The buttes also denoted the Continental Divide and the point where they crossed into the Pacific watershed.

The ACEC provides excellent wildlife habitat. The area is used heavily by big game species, and the buttes themselves are occupied by many raptors. Deer fawning and elk calving also occur in the area.

Honeycomb Buttes, Oregon Buttes, and Whitehorse Creek WSAs overlap the ACEC, thus the ACEC is managed under the BLM Interim Management Policy for Lands Under Wilderness Review (BLM Manual H-8550-1).

3.7.1.2.3 South Pass Historic Landscape

The South Pass Historic Landscape ACEC was designated in 1997. Management priority and emphasis was given to maintaining and enhancing the visual and historic integrity of the historic trails and their surrounding viewscape.

South Pass is located on the northwest edge of the Wyoming Basin. The pass was the site where emigrant travelers traversed the Continental Divide, and thus it roughly marks the halfway point in the epic westward journey. The scenic vista of South Pass is among the most important historic landscapes, because South Pass served as the primary mountain gateway to the West along the Oregon, Mormon Pioneer, Pony Express, and California National Historic Trails. This viewscape includes the top rim of Pacific Butte on the south and the divide between waters flowing to Pacific Creek and the Sweetwater River on the north and east.

The site on the pass where several commemorative markers have been placed is listed on the National Register of Historic Places. In 1959 the National Park Service designated South Pass a National Historic Landmark. The National Park Service proposed a boundary for the landmark in 1984; however, an official boundary has not been delineated.

3.7.1.2.4 Steamboat Mountain

The Steamboat Mountain ACEC was designated in 1997 to protect wildlife and cultural values of national significance and unique habitat features. The area is the year-round home of the Steamboat desert elk herd and has highly varied topographic features and unique habitats of stabilized sand dunes that are found nowhere else in the resource area.

Tall sagebrush of up to 8 to 12 feet provides escape cover, shelter, thermal protection, and birthing areas for big game. Limber pine and aspen communities provide habitat to a wide variety of wildlife but are limited in size and localities. Other mountain shrub communities, such as serviceberry and mountain mahogany, provide forage in deep snow conditions. Grass-covered ridgetops offer additional forage for elk during crucial winter periods.

The Steamboat Mountain ACEC, along with a portion of the Greater Sand Dunes ACEC and overlapping crucial winter range, is part of what is called the "core area" within the planning area. The core area is approximately 90,700 acres in size and is considered the most crucial habitat for many of the species (especially elk and deer) that inhabit the planning area.

3.7.1.2.5 White Mountain Petroglyphs

The White Mountain Petroglyphs ACEC was designated in 1982 to protect cultural values of national significance. Native American drawings associated with the early ancestors of the present Shoshone Tribe and perhaps other tribes are contained within the ACEC. Common drawings include human figures, elk, buffalo, feather headdresses, and human stick figures.

Several times during consultations both tribal councils and elders pointed out the importance of wildlife, especially elk in the Jack Morrow Hills area. The time depth of Native American appreciation of the Steamboat elk herd seems evident at White Mountain Petroglyphs. A number of renditions of elk are depicted in an amplified scale compared to warriors on horseback, bison, tipis and other features. The fact that these drawings of elk are very detailed, and that they are roughly five times larger than people and other animals depicted at the site reinforces the contention by modern Native Americans that the Steamboat elk herd has long been important to Native people of the area.

3.7.1.2.6 Special Status Plant Species

The Special Status Plant Species ACEC was designated in 1997. Special status plants are those listed, proposed for listing, or candidates for listing as T&E under the ESA, identified by the state in a category implying potential endangerment or extinction, or species designated by the BLM State Director as sensitive.

Management priority and emphasis for the ACEC was given to maintain or enhance these species and their habitats. Although no species associated with the ACEC occur within the planning area, there is potential for other sensitive species to be added to the ACEC as provided in the Green River RMP.

3.7.1.3 Special Recreation Management Areas

SRMAs include areas where a commitment has been made to provide specific recreation activity and experience opportunities. These areas usually require a high level of recreation investment and management. There are two areas within the planning area designated as SRMAs: (1) Greater Sand Dunes and (2) Oregon, Mormon Pioneer, California, and Pony Express National Historic Trails.

3.7.1.3.1 Greater Sand Dunes

The Greater Sand Dunes SRMA incorporates the boundary of the Greater Sand Dunes ACEC and provides outstanding motorized and nonmotorized recreational values. In 1983, an ACEC management plan was completed that also serves as the Recreational Activity Management Plan for the SRMA. Located within the eastern portion of the SRMA is the Greater Sand Dunes Recreation Area, which carries an "open" OHV designation on 10,020 acres. The SRMA also contains an OHV parking lot and camping area that were built in the mid-1980s.

3.7.1.3.2 Oregon, Mormon Pioneer, California, and Pony Express National Historic Trails

The National Trails System Act provides for the designation and protection of original trails or routes of travel of national historic significance and historic remnants and artifacts for public use and enjoyment.

National Historic Trails are designated through criteria established in the act, and only those parts of the trail that meet the criteria and are contained on federal lands are provided protection.

The Rock Springs Field Office manages hundreds of miles of the best traces of 19th century emigration trails, including the Oregon, Mormon Pioneer, California, and Pony Express trail systems. These trails represent the main overland routes of people, property, and information available during the nation's westward expansion. The National Historic Trails SRMA is within the South Pass Historic Landscape ACEC and is managed for a range of visitors, from local dedicated OHV users to the transient visitor that is simply passing through the area. The National Park Service prepared a comprehensive management and use plan in 1999 for the California and Pony Express National Historic Trails and an update to the Oregon and Mormon Pioneer National Historic Trails Management Plan. The trails are described in Section 3.2, Heritage Resources.

3.7.2 Other Management Areas

3.7.2.1 Red Desert Watershed Management Area

The Red Desert Watershed was identified as a watershed management area in the Green River RMP. The management objective established for the watershed is management of all resource values in the Red Desert area, with emphasis on protection of visual resources, watershed values, and wildlife resources, and the provision of large areas of unobstructed views for enjoyment of scenic qualities.

The Red Desert Watershed comprises one of the last undeveloped high desert regions in the west. It contains unique landforms, colorful badlands, and shifting sand dunes. Much of the Red Desert Watershed still looks the same way it did when the pioneers passed through the Continental Divide on the Oregon and Mormon Pioneer Trails. The Red Desert Watershed also contains portions of four WSAs within the planning area: Alkali Draw, Honeycomb Buttes, Oregon Buttes, and South Pinnacles. Portions of the Oregon Buttes and Steamboat Mountain ACECs are also within the Red Desert Watershed.

The Red Desert Watershed falls within the Great Divide Basin, which is a hydrologically closed basin. Most streams are intermittent and flow toward the center of the basin into playa lakes, where they either recharge the aquifers or evaporate. Artesian groundwater and unconfined groundwater are found throughout the watershed area.

The Great Divide Basin is a cold, high-elevation desert environment that provides habitat for a variety of wildlife species. Along Bush Rim, Freighter Gap, and other rims surrounding the basin, vegetation is highly variable and provides the most cover and forage. Aspen and limber pines provide cover for big game. South-facing slopes containing serviceberry, mountain mahogany, and currants are favored as big game winter range. Raptors can also be found throughout the watershed area, although most are concentrated in the Oregon Buttes ACEC and the Honeycomb Buttes WSA.

3.7.2.2 Pinnacles Geographic Area

The Pinnacles Geographic Area includes approximately 8,900 acres in the southeast portion of the Red Desert Watershed. The area is identified as having values of naturalness, solitude, and a primitive unconfined type of recreation. The Pinnacles Geographic Area includes the Pinnacles Geologic Feature, which is a 1,344-acre scenic, geologic, and watershed sensitive area that contains the actual Pinnacle monoliths, identified as the Pinnacles Proper (approximately 660 acres). The Pinnacles are visually interesting compared with other landforms in the surrounding area. Most landforms in this area are horizontal rims, whereas the Pinnacles are vertical and protrude upward from the desert floor, providing a very interesting contrast. The Pinnacles themselves are nesting grounds for the ferruginous hawk.

3.8 AIR RESOURCES

Air resources are affected predominantly by existing concentrations of various pollutants and the climatic and meteorological conditions that influence their fate and transport in the atmosphere.

3.8.1 Climate and Meteorology

The climate of the JMH CAP planning area is classified as semi-arid steppe (Trewartha and Horn 1980). Steppe climate is characterized by large seasonal variations in temperature (cold winters and warm summers) and precipitation that is slight but still sufficient for the growth of short sparse grass. The dryness of the mid-latitude steppe climate of southwestern Wyoming is due to the distance from the Pacific Ocean, the main source of precipitable water for North America. This aridity is further intensified by the Rocky Mountains, which block the eastward flow of humid coastal air. In addition, annual rainfall amounts vary greatly from year to year (Trewartha and Horn 1980).

Weather stations in the planning area include those located in Rock Springs and Farson in Sweetwater County, Wyoming. Rock Springs is at an elevation of 6,741 feet and is about 15 miles south of the JMH CAP planning area. Farson is at an elevation of 6,675 feet and is about 4 miles northeast of the JMH CAP planning area.

3.8.1.1 Temperature

Mean annual temperatures range from 36 degrees °F in Farson to 43 degrees °F in Rock Springs. Summer highs are usually in the 70s and 80s but may reach the high 90s. Winter lows are generally in the minus single digits but may reach the minus 20s in Farson. Rock Springs winter lows are generally in the teens.

3.8.1.2 Precipitation

Mean annual precipitation is 8 and 9 inches in Farson and Rock Springs, respectively. Annual precipitation ranges from 3 or 4 inches in drought years to as much as 17 inches in wet years. Mean monthly precipitation is greatest in spring. Mean annual snowfall in Farson averages about 3 feet, with most snow occurring from November through April. Mean annual snowfall in Rock Springs averages just under 4 feet, with most snow occurring from October through April. Average snow depth is 2 or 3 inches.

3.8.1.3 Dispersion

Atmospheric stability is a measure of the atmosphere's capacity to disperse pollutants. Mean annual stability at Rock Springs is high (leading to low dispersive capacity) less than 20 percent of the time, low (leading to high dispersive capacity) about 20 percent of the time, and neutral (leading to fair dispersive capacity) more than 60 percent of the time (USDI 1999a).

3.8.1.4 Wind Velocity

Winds in Rock Springs are relatively strong and are generally from the west and west-southwest.

3.8.2 Air Quality

Elements of air quality addressed in this study include concentrations of air pollutants, visibility, and atmospheric deposition. See Appendix 15 for more detailed information.

3.8.2.1 Pollutant Concentrations

Pollutant concentration refers to the mass of pollutants present in a volume of air and is reported in units of μg/m^3. Air quality in the planning area is considered excellent; however, current and complete concentration data on criteria air pollutants for JMH and the immediate vicinity are not available. The State of Wyoming has used monitoring to determine that the JMH region is in compliance with Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS) (Table 3-27, Figure A15-10, and Figure A15-11).

Table 3-27. Background Concentrations of Criteria Air Pollutants

Pollutant	Averaging Time	Background Concentration (μg/m^3)	Percent NAAQS (%)	Percent WAAQS (%)
Carbon Monoxide (CO)	8 hour	1,500	15	15
	1 hour	3,500	9	9
Nitrogen Dioxide (NO_2)	Annual	3.4	3	3
Sulfur Dioxide (SO_2)	Annual	9	11	5
	24 hour	43	12	17
	3 hour	132	10	19
Ozone (O_3)	8 hour	147	94	94
	1 hour	169	72	72
Particulate Matter (PM_{10})	Annual	16	32	32
	24 hour	40	27	27
Fine Particulate Matter ($PM_{2.5}$)	Annual	5	33	33
	24 hour	13	20	20

Refer to the Pinedale Anticline Oil and Gas Exploration and Development Project for description of data sources.

3.8.2.1.1 Carbon Monoxide

Carbon monoxide data were collected in Colorado in conjunction with the proposed oil shale development in the 1980s (USDI 1983). Because CO data are generally collected only in urban areas where automobile traffic levels are high, recent data are often unavailable for rural areas.

3.8.2.1.2 Nitrogen Dioxide

Nitrogen dioxide data were collected at the Green River Basin Visibility Study site from January 1 to December 31, 2001. Monitoring of other nitrogen-containing pollutants shows that concentrations at Pinedale, Wyoming, of nitric acid (HNO_3), nitrate (NO_3), and particulate ammonium (NH_4) are low and not increasing over time.

The Clean Air Status and Trends Network (CASTNet) has measured concentrations of nitric acid, nitrate, and ammonium, as well as ozone, sulfur dioxide, and sulfate, in the United States since the late 1980s. There are three CASTNet stations in Wyoming: Centennial, Yellowstone National Park, and Pinedale. Figure A15-1 shows mean annual concentrations of nitrogen-containing pollutants in Pinedale from 1989 through 1999 to be 0.5 μg/m^3 or less.

The Wyoming Air Resources Monitoring System (WARMS) has measured concentrations of nitrate and particulate ammonium, as well as sulfur dioxide and particulate sulfate, in Wyoming since 1999. There are four WARMS stations in Wyoming: Centennial, Buffalo, Sheridan, Newcastle, and Pinedale. Weekly concentrations of NO_3 are below 1.5 μg/m^3, and concentrations of NH_4 are below 0.5 μg/m^3.

Because the chemistry of nitrogen-containing pollutants is very complex, it would be inappropriate to infer NO_2 concentrations from concentrations of HNO_3, NO_3, and NH_4. However, it would be unlikely that high NO_2 concentrations would occur with low concentrations of other nitrogen-based pollutants.

3.8.2.1.3 Sulfur Dioxide

Sulfur dioxide data were collected at the La Barge study area in the 1980s. More recent SO_2 data were collected by CASTNet and WARMS in Pinedale. Figure A15-2 shows mean annual CASTNet concentrations of SO_2 in Pinedale from 1989 through 2001 to be about 0.5 $\mu g/m^3$. Weekly WARMS concentrations of SO_2 from mid-1999 through 2001 are approximately 1.5 $\mu g/m^3$ or less. Although it may not be appropriate to compare mean annual CASTNet SO_2 concentrations with national or Wyoming standards, the CASTNet concentrations do suggest that SO_2 concentrations are well below NAAQS and WAAQS.

3.8.2.1.4 Ozone

Ozone concentration data were collected at the Green River Basin Visibility Study site from June 10, 1998, to December 31, 2001. Ozone data were also collected by the CASTNet station at Pinedale. Concentrations are relatively high but in compliance with NAAQS and WAAQS. Figure A15-3 shows mean annual O_3 concentrations have remained steady from 1989 through 2001.

3.8.2.1.5 Particulate and Fine Particulate Matter

Particulate matter (PM_{10}) data were collected at the Carbon County Underground Coal Gasification site in 1994 and 1995. Fine particulate matter ($PM_{2.5}$) data were estimated at half PM_{10} concentrations, as recommended by the Environmental Protection Agency (EPA). Mean annual PM_{10} concentrations were 32 percent of NAAQS and WAAQS, and mean annual $PM_{2.5}$ concentrations were 33 percent of NAAQS.

3.8.2.2 Visibility

The Inter-Agency Monitoring of Protected Visual Environments (IMPROVE) has measured visibility in national parks and wilderness areas in the United States since the 1980s. Six IMPROVE stations are located in Wyoming. The IMPROVE station closest to the JMH CAP planning area is in the Bridger Wilderness. The best visibility monitored in the contiguous United States is at this station.

Visibility can be expressed in terms of deciviews (dv), a measure for describing perceived changes in visibility. One dv is defined as a change in visibility that is just perceptible to an average person, about a 10 percent change in light extinction. Monitored aerosol concentrations are used to reconstruct visibility conditions.

- 20 percent cleanest: Mean visibility for the 20 percent of days with the best visibility
- Average: The annual median visibility
- 20 percent haziest: Mean visibility for the 20 percent of days with the poorest visibility.

Figure A15-4 shows annual visibility in the Bridger Wilderness from 1988 through 1999. Visibility on the 20 percent cleanest days varies from 5 to 3 dv (visual range of about 136–68 miles). Average visibility varies from 8 to 6 dv (about 96 to 114 miles). Visibility for the 20 percent haziest days varies from 12 to 10 dv (about 56–6 miles). Trend analysis of Bridger visibility data reveals no significant worsening trend in visibility from 1989 through 2001.

3.8.2.3 Atmospheric Deposition

Atmospheric deposition refers to the processes by which air pollutants are removed from the atmosphere and deposited on terrestrial and aquatic ecosystems and is reported as the mass of material deposited on an area (kilogram per hectare [kg/ha]). Air pollutants are deposited by wet deposition (precipitation) and dry deposition (gravitational settling of particles and adherence of gaseous pollutants to soil, water, and vegetation). Substances deposited include—

- Acids such as sulfuric acid (H_2SO_4) and nitric acid (HNO_3), sometimes referred to as "acid rain"
- Air toxics such as pesticides, herbicides, and volatile organic compounds (VOC)
- Nutrients such as nitrate (NO_3) and ammonium (NH_4).

Estimation of atmospheric deposition is complicated by the contribution to deposition of several components: rain, snow, cloud water, particle settling, and gaseous pollutants. Deposition varies with precipitation, which in turn varies with elevation and time.

3.8.2.3.1 Wet Deposition

The National Atmospheric Deposition Program (NADP) assesses wet deposition by measuring the chemical composition of precipitation (rain and snow). Figure A15-5 shows the precipitation pH in Pinedale from 1982 through 2002. The natural acidity of rainwater is generally represented by a range of pH values from 5.0 to 5.6. Mean annual pH at Pinedale is generally within this range, although from 1994 through 1998 pH values dropped. During this period, pH ranged from 4.9 to 5.0. These lower values may be the result of anthropogenic acidification of precipitation in Pinedale, Wyoming.

Figure A15-6 shows mean annual wet deposition of ammonium (NH_4), nitrate (NO_3), and sulfate (SO_4). Deposition values are low: approximately 0.5 kg/ha for NH_4^+, less than 3 kg/ha for NO_3, and less than 4 kg/ha for SO_4. Deposition values from 1982 through 2000 are low and steady, indicating that deposition has not worsened during that time.

3.8.2.3.2 Dry Deposition

Dry deposition refers to the transfer of airborne gaseous and particulate material from the atmosphere to the Earth's surface. CASTNet measures dry deposition of ozone (O_3), sulfur dioxide (SO_2), nitric acid (HNO_3), sulfate (SO_4), nitrate (NO_3), and ammonium (NH_4). Figure A15-7 shows mean annual dry deposition of sulfur- and nitrogen-containing compounds for Pinedale, Wyoming, from 1990 through 2001. Deposition values are low and steady, indicating that deposition has not worsened during this time.

3.8.2.4 Lake Chemistry

Acid deposition can cause acidification of lakes and streams. One expression of lake acidification is change in acid neutralizing capacity (ANC), the lake's capacity to resist acidification from acid rain. Acid neutralizing capacity is expressed in units of micro-equivalents per liter (μeq/l). Lakes with ANC values of 25 to 100 μeq/l are considered to be sensitive to acid rain, while lakes with ANC values of less than 25 μeq/l are considered to be extremely sensitive.

3.8.2.5 Summary of Existing Air Quality

Table 3-28 provides a summary of air quality monitoring and dispersion modeling, which shows that air quality in the JMH region is generally good.

Table 3-28. Air Quality Summary

Air Quality Component	Status
	Air Pollutant Concentration
Criteria Air Pollutants	Concentrations are in compliance with NAAQS and WAAQS
Nitrogen Compounds	• Nitric acid (HNO_3): Concentrations are slightly higher than typical for remote areas • Nitrate (NO_3) and ammonium (NH_4): Concentrations are typical for remote areas
Sulfur Compounds	• Sulfur dioxide (SO_2): Concentrations are well below concentrations typical in remote areas • Sulfate (SO_4): Concentrations are typical for remote areas
	Visibility
Bridger Wilderness	• 20% cleanest: 136–168 miles • Average: 96–114 miles • 20% haziest: 56–76 miles
	Atmospheric Deposition
Precipitation pH	Slight acidification from 1994 to 1998 (pH varied from 4.9 to 5.0)
Total Deposition	• Nitrogen: Deposition from ammonium (NH_4) and nitrate (NO_3) is less than 2.6 kg/ha[1] • Sulfur: Deposition from sulfate (SO_4) and sulfur dioxide (SO_2) is less than 1.7 kg/ha[2]

[1] Proposed acceptable level of total nitrogen deposition is 3 to 5 kg/ha/year (USFS 1989)

[2] Proposed acceptable level of sulfur deposition is 5 kg/ha/year (USFS 1989)

3.9 SOCIOECONOMICS

The JMH is located in southwest Wyoming in portions of Sweetwater, Fremont, and Sublette Counties. Activities in the planning area have the potential to affect all three counties; thus, the socioeconomic study area includes these three counties. Data on economic characteristics have been obtained where possible for the past 20 years to examine trends in the study area.

3.9.1 County Characteristics

The characteristics of the planning area reflect those of the State of Wyoming as a whole. The three counties in the area encompass a rather large landmass with a dispersed population and few urban areas. Federal public lands also dominate this area, as summarized in Figure 3. Within the three counties, federal agencies control 65 percent of the surface acreage, with BLM managing the majority of these acres. The JMH CAP planning area comprises approximately 622,000 surface acres, which is 4 percent of the socioeconomic study area. Land ownership within the planning area is split between federal, state, and private entities, as shown in Figure 3.

3.9.2 Demographic Characteristics

Demographic characteristics of the area include study area population trends and trends in personal income levels.

3.9.2.1 Population

Annual population estimates for each of the three counties for 1980 to 2000 are plotted in Figure 4. Population within the study area declined by more than 9 percent during the 1980s, unlike the State of Wyoming as a whole, which experienced a population increase. The opposite situation occurred during the 1990s, when population in the study area increased by 5.2 percent, exceeding population growth in the state.

Population changes occur from both "natural changes" (i.e., the net result of births and deaths) and from "net migration" (i.e., the net result of persons moving in and out of the area). Natural changes caused an increase in the study area population of nearly 14 percent in the 1980s and of 6.6 percent during the 1990s. However, net migration led to more people leaving this same area over the past two decades. All three counties reported significant decreases in population due to net migration during the 1980s, with nearly 20,000 people leaving the area. Net migration led to increases in population in Sublette and Fremont Counties during the 1990s, while Sweetwater County reported a nearly 7 percent decline.

3.9.2.2 Personal Income Trends

Personal income data were obtained for each of the counties in the study area from the U.S. Bureau of Economic Analysis (BEA). Table 3-29 summarizes components of personal income for 1979 and 1999 for the three combined counties in inflation-adjusted dollars for 2001. Total personal income was more than $2 billion in 1999, up from $1.7 billion in 1979. During this 20-year period, personal income grew by more than 14 percent, with all of the growth occurring during the 1990s.

Personal income can be broken down into three categories: labor income, investment income, and transfer payments income. Labor income is derived through wages, salaries, and self-employment income. Investment income includes income in the form of rents, dividends, and interest earnings. Transfer payments income is largely derived from Social Security benefits, Medicare and Medicaid benefits, and other income support and assistance.

Table 3-29. Estimated Personal Income

Personal Income by Source ($1,000)			Percentage of Total Personal Income	
(1)	(2)	(3)	(4)	(5)
	1979	1999	1979	1999
Transfer payments	$111,686	$273,353	6.4%	13.5%
Manufacturing	$47,485	$110,045	2.7%	5.4%
Mining	$574,033	$332,537	32.9%	16.5%
Investment income	$67,002	$135,760	3.8%	6.7%
Agriculture	$2,961	$4,620	0.2%	0.2%
Federal and State Government	$64,793	$91,243	3.7%	4.5%
Total income earned from basic industries and outside sources	$867,960	$947,558		
Total Personal Income	**$1,742,472**	**$2,019,817**	**49.8%**	**46.9%**

Source: U.S. Department of Commerce, Bureau of Economic Analysis, Regional Accounts Data, Table CA05 Personal Income by Major Source and Earnings by Industry, 1979–1999.

The study area is showing signs of shifting patterns of income growth. Labor income now accounts for 64 percent of total personal income, down from nearly 81 percent in 1979. Income from nonlabor sources has grown from 19 percent in 1979 to 36 percent in 1999. This change in how individuals earn income is not unlike national or state trends. For the nation as a whole, labor income fell from 73 percent in 1979 to 68 percent in 1999. Similarly, labor income as a percentage of total income in Wyoming fell from 82 percent in 1979 to 66 percent in 1999.

The study area has consistently reported lower than average per capita income than the national and state averages. By 1999, per capita income for the study area was $24,836, which was below the national ($27,358) and state ($27,528) averages.

3.9.3 Economic Characteristics

This section focuses on trends associated with certain economic characteristics in the study area. This includes changes in the labor force and unemployment and trends in employment and earnings by industry.

3.9.3.1 Labor Force and Unemployment

Change in the labor force and unemployment can provide information on the health of the local economy. The average annual unemployment rates for each of the three counties, for Wyoming, and for the United States are summarized in Figure 5. Unemployment in the study area was consistently higher than unemployment for the State of Wyoming during the 1990s. In addition, unemployment in this area has been higher than the national average since 1993. Fremont County reported the highest unemployment during this time, followed by Sweetwater County. Sublette County consistently reported unemployment levels below the state and national averages during the 1990s.

3.9.3.2 Employment and Earnings by Industry

The BEA estimates annual employment and earnings for counties throughout the United States. Total annual employment includes both full-time and part-time jobs, so individuals with more than one job would be counted twice. Employment estimates include people employed by businesses and public entities, as well as persons who are self-employed. Data were obtained from BEA for total annual employment for each county within the study area, for Wyoming, and for the United States for 1979, 1989, and 1999 to examine trends in employment by industry over this 20-year period. A summary of this information is provided in Appendix 16.

Total employment in the study area increased by 9 percent over the 20-year period, from 45,028 jobs in 1979 to 49,048 jobs in 1999. This lags behind the employment growth rate for the State of Wyoming and the United States as a whole. For example, over the same 20-year period, total employment grew by 19 percent in Wyoming and 36.4 percent nationwide.

Employment by industry for 1999 is summarized in Figure 6. Services, government, and trade constitute the largest percentage of total employment for this area. These three industries accounted for more than 60 percent of total employment in 1999. Industries showing the greatest increase in employment between 1979 and 1999 include services, government, and retail trade. Manufacturing also reported an increase in employment during this same period. Industries showing the greatest decline in employment between 1979 and 1999 were mining, construction, and farming.

Typically, rural areas such as southwest Wyoming are more dependent on traditional natural resource-based industries, such as mining and agriculture. The study area is more dependent on mining for employment than is the State of Wyoming. Mining jobs accounted for 10 percent of total employment in the study area in 1999, compared with 5.5 percent throughout the state. However, this area is slightly less dependent on farm employment than is the rest of the state. In 1999, farm employment accounted for 3.5 percent of total employment in the study area and 3.8 percent throughout Wyoming.

Total earnings by industry in the study area, in Wyoming, and in the United States for 1979, 1989, and 1999 were also obtained from BEA (Appendix 16). Total gross earnings for all industries (private nonfarm, farm, and government) fell by 8 percent between 1979 and 1999, with all the decrease occurring during the 1980s. However, earnings have been increasing over the past decade.

Figure 7 provides a summary of gross earnings by industry for the study area in 1999. Mining provided the largest percentage (24 percent) of earnings of any industry in the area. This category includes metal, nonmetallic, coal mining, and oil and gas operations. Of these subcategories, oil and gas operations made up approximately 45 percent of mining earnings in 1999 for this area.

Although mining remains important in terms of earnings for this area, the industry has reported significant declines in earnings between 1979 and 1999. Over the past 20 years, mining earnings declined by 90 percent, with most of this decline occurring during the 1990s. Other industries reporting declines in earnings between 1979 and 1999 include construction and farm services. Other industries important to this area in terms of earnings during 1999 include government, services, and trade. Industries reporting gains in earnings for the study area include manufacturing; finance, insurance, and real estate; and services. However, these three industries combined only accounted for 14 percent of total earnings for the study area in 1999.

Another method of examining the importance of certain industries is to evaluate the trends in average earnings per job. Industries paying the highest earnings per job in 1999 were mining ($68,000), transportation and utilities ($46,000), and manufacturing ($46,000), whereas mining, manufacturing, and government industries reported the greatest increase in earnings per job between 1979 and 1999. Several industries reported declines in real earnings per job, with the greatest decline reported in agricultural services, construction and trade industries, followed by farming and services.

3.9.3.3 Economic Base

An area's economic base is made up of the industries primarily responsible for bringing outside income into the local economy. Certain sectors within the economy are thought to be "basic" in nature, in that most of their sales are tied to outside markets or customers. These industries include manufacturing, mining, and agriculture. In addition, certain government sectors, such as federal and state government, are considered basic in nature because employees are paid from sources outside the local area.

Outside sources of income can also be derived from nonlabor sources (investment income and transfer payments). For example transfer payment income can become an "economic driver" for the area's economy, because many transfer payment programs are sustained by sources outside the local area. Therefore, when income of this type is received, spent, and respent in the area, it generates additional income for the local economy. This is also true of investment income. Because it is not known for certain what percentage of investment income is generated from outside sources, an assumption was made that 30 percent was generated from such sources.

Using these definitions of basic industries and outside sources of income, an analysis was conducted on the components of the economic base of the economy in the study area. Table 3-29 provides a breakdown of the components of the study area's economic base and outside sources of income for 1979 and 1999.

Columns 4 and 5 show that the percentage of total income earned from outside sources declined by 3 percent between 1979 and 1999. In addition, there appeared to be a shift in the sources of outside income during the study period. Mining continued to account for the largest percentage of outside income, at 16.5 percent but had declined in importance since 1979, when the industry accounted for 33 percent of outside income. In 1999, transfer payments were the second largest source of outside income, followed by investment income, manufacturing, and government. As of 1999, transfer payments made up more than

13 percent of personal income for the study area, up from 6.4 percent in 1979. Over the study period, agriculture consistently provided a very small percentage of outside income for the study area.

Examination of these data indicates that the economy in the study area is lacking diversity, with a heavy dependence on one industry: mining. The mining industry has experienced declines over the past 20 years; thus, other sources of income are now becoming more important. Data indicate that the study area is becoming more dependent on nonlabor sources of income, such as transfer payments and investment income, which now account for more than 20 percent of outside income.

However, these data do not shed light on how the economy may be diversifying into other industries that are capable of bringing outside income into the local economy. For example, other industries, such as construction, real estate, and some service sectors, will bring outside income into the economy. It is possible that certain service sectors and the financial, insurance, and real estate sector have brought in additional outside income because of the nature of their business and the modest growth during the study period. The construction sector is likely not contributing to any economic diversification given its decline in the study area.

3.9.4 Property Valuation and Taxation

Total property valuation for 2001 for each of the three counties in the study area is summarized in Figures 8 and 9. This valuation includes property assessed by the State of Wyoming and locally assessed property. The State of Wyoming assesses taxes on both mineral and nonmineral property. Nonmineral property assessed by the state includes airlines, utilities, pipelines, gas distribution systems, railroads, and phone service (Wyoming Department of Revenue Annual Report 2001). During fiscal year 2001, the valuation of property assessed by the state was $2.2 billion for the study area. Local government also assesses four categories of property: agricultural land, residential and commercial land, improvements and personal property, and industrial property. The value of property assessed by local governments in the study area exceeded $584 million, whereas the total value of assessed property during fiscal year 2001 was $2.9 billion.

Mineral production in the study area is a major source of tax revenue for government entities. During fiscal year 2001, minerals accounted for 80 percent of the property value assessed in the study area. In addition oil and gas production and operations provided a significant percentage of the assessed value of minerals. Table 3-30 summarizes the assessed value of oil and gas production and property for fiscal year 2001 for each of the counties in the study area. Oil and gas production accounted for 85 percent of all mineral valuation for 2001 as assessed by the state. For Fremont and Sublette Counties, oil and gas production accounted for nearly 100 percent of all assessed mineral production. The physical assets of the oil and gas industry (property) constituted 19 percent of all property assessed by local governments. Of all property and production assessed by state and local governments, oil and gas operations accounted for 67 percent of assessed value in the three-county study area during fiscal year 2001.

Table 3-30. Assessed Value of Oil and Gas Production and Property Fiscal Year 2001

County	Oil and Gas Valuation–Production	Oil and Gas Valuation As % of Total Mineral Valuation	Oil and Gas Valuation–Property	Oil and Gas Property As % of Total Property Valuation	Oil and Gas Valuation As % of Total State and Local Assessed Property Valuation
Fremont	$352,327,499	99.92%	$26,556,445	16%	70%
Sublette	$736,577,260	99.95%	$42,147,672	39%	91%
Sweetwater	$670,371,775	68.39%	$42,161,137	17%	51%
Total for Study Area	**$1,759,276,534**	**85.00%**	**$110,865,254**	**19%**	**67%**

3.9.4.1 Ad Valorem Taxes—Counties

Estimated ad valorem taxes from mineral production for each county during fiscal year 2001 are summarized in Table 3-31. The counties generated more than $129 million in tax revenues from mineral production, of which $110 million, or 85 percent, was derived from oil and gas production. Table 3-32 provides an estimate of the ad valorem taxes assessed on property associated with oil and gas operations. During fiscal year 2001, the three counties generated an estimated $7 million in property taxes associated with oil and gas extraction assets.

Table 3-31. Estimated Mineral Ad Valorem Tax Revenues Fiscal Year 2001

County	Natural Gas	Crude Oil	Stripper Oil	Coal	Trona	Sand and Gravel	Total
Fremont	$19,307,950	$4,016,437	$837,264	$0	$0	$20,468	$24,182,119
Sublette	$38,224,451	$4,734,654	$387,730	$0	$0	$19,830	$43,366,665
Sweetwater	$35,541,587	$6,938,002	$51,925	$6,544,036	$13,083,494	$28,479	$62,187,523
Total for Study Area	**$93,073,988**	**$15,689,093**	**$1,276,919**	**$6,544,036**	**$13,083,494**	**$68,777**	**$129,736,307**

Table 3-32. Estimated Ad Valorem Tax Revenues on Oil and Gas Property Fiscal Year 2001

County	Assessed Valuation	Average Tax Levy*	Estimated Ad Valorem—Property
Fremont	$26,556,445	68.58	$1,821,168
Sublette	$42,147,672	58.85	$2,480,348
Sweetwater	$42,161,137	63.44	$2,674,899
Total for Study Area	**$110,865,254**		**$6,976,415**

*Tax levy applied to every $1,000 of assessed value.

Table 3-33 estimates the importance of oil and gas operations in terms of local government property tax revenues. The three counties in the study area generated $117 million in tax revenues from oil and gas operations, which accounted for approximately 66 percent of property taxes generated for fiscal year 2001.

Table 3-33. Oil and Gas Tax Revenues As Percentage of Total County Property Taxes for Fiscal Year 2001

County	Ad Valorem Tax Revenue–Oil and Gas	County Property Tax Revenues	Oil and Gas Tax Revenue As % of County Property Tax Revenues
Fremont	$25,982,819	$37,234,045	70
Sublette	$45,827,184	$49,800,369	92
Sweetwater	$45,206,413	$89,145,656	51
Total for Study Area	**$117,016,416**	**$176,180,070**	**66**

3.9.4.2 Mineral Severance Taxes

Local government entities also benefit from severance taxes collected on mineral production throughout the State of Wyoming. The state assessed $2.1 billion for mineral production in the three-county study area. However, severance taxes collected on mineral production are distributed within the state according to a formula published in the state statutes. Severance tax revenues are distributed to a variety of sources, including the state general fund, water development account, state highway fund, counties, and cities and towns. Therefore, government entities will only benefit from a percentage of severance taxes collected on production within the study area, although these entities will also benefit from severance taxes collected on mineral production in other parts of the state. Table 3-34 summarizes the total severance tax revenues that were distributed to the local government entities within the study area during fiscal year 2001.

Table 3-34. Total Severance Tax Distributions for Government Entities Fiscal Year 2001

Area	Severance Tax Distributions
Counties in Study Area	$2,313,489
Total Severance Taxes Distributed to All Counties in WY	$13,843,706
Percentage Distributed to Study Area Counties	17%
Cities and Towns in Study Area	$5,518,054
Total Severance Taxes Distributed to All Cities and Towns in WY	$35,370,306
Percentage Distributed to Study Area Cities/Towns	16%

Source: Annual Report of the Treasurer of the State of Wyoming, June 30, 2001.

Table 3-35 estimates the severance taxes that are generated from mineral production originating within the study area. The estimated severance taxes for each mineral type are based on production and assessed values and the effective tax rates, all of which were obtained from the Wyoming Department of Revenue, Mineral Tax Division. Natural gas production generated the most severance tax revenue in the study area, accounting for approximately 75 percent of all severance taxes generated.

Table 3-35. Severance Tax Revenue Fiscal Year 2001

County	Natural Gas	Crude Oil	Stripper Oil	Coal	Trona	Sand and Gravel	Total
Fremont	$16,893,022	$3,514,084	$488,363	$0	$0	$5,969	$20,901,438
Sublette	$38,972,065	$4,827,257	$263,542	$0	$0	$6,739	$44,069,603
Sweetwater	$33,611,891	$6,561,310	$32,737	$7,220,190	$8,248,759	$8,978	$55,683,865
Total	**$89,476,978**	**$14,902,651**	**$784,642**	**$7,220,190**	**$8,248,759**	**$21,686**	**$120,654,906**
% Severance Tax	74.2	12.4	0.7	6.0	6.8	0.02	100

3.9.4.3 Federal Royalties

Mineral production occurring on federally owned public lands is also assessed a federal mineral royalty. Production is assessed at 12.5 percent of value after allowable deductions. The Federal Government returns 50 percent of the total royalties collected to the state where the mineral production occurred. In Wyoming, distribution of the federal royalties is based on a formula promulgated by the Wyoming State Statutes (W.S. 9-4-601). The state allows a percentage of the federal royalties to be distributed to cities and towns for planning, construction, and maintenance of public facilities, for capital construction funds, and for transportation projects. Local school districts may benefit from federal royalty payments through advanced entitlement grants for capital construction funds. Total federal royalties distributed to local government agencies in the study area for fiscal year 2001 were $3.28 million (Wyoming State Treasurer 2001).

3.9.4.4 Mineral Taxation of Production—Jack Morrow Hills

Tables 3-36 through 3-38 provide an estimate of the mineral tax revenues associated with oil and gas production within the planning area for production year 2000. Actual production was obtained from the Wyoming Oil and Gas Conservation Commission and was used in combination with the average taxable valuation per unit and average tax and royalty rates to estimate ad valorem taxes (county), severance taxes (state), and federal royalties. Oil and gas production occurring within the planning area generated an estimated $1.58 million in mineral tax revenues to the county, the state, and the Federal Government during fiscal year 2001.

Figure 10 shows an estimate of the ad valorem taxes generated from gas production throughout the study area and the JMH CAP planning area. This graph demonstrates that JMH has historically accounted for a small fraction of gas production in the study area, which equates to a small percentage of ad valorem taxes generated in these counties. In addition, production has been declining over time in the planning area, making it less important to the counties as a source of mineral tax revenues relative to other producing areas.

Table 3-36. Estimated Ad Valorem Tax Production From JMH

Product	Annual Production (BBLs/MCF)	Taxable Valuation Per Unit	Assessed Valuation	Average Tax Levy	Estimated Ad Valorem
(1)	(2)	(3)	(4) = (2)*(3)	(5)	(6) = (4)/1000*(5)
Oil	302	$24.47	$7,390	63.445	$469
Natural Gas	2,012,000	$2.60	$5,231,200	63.445	$331,892
Total			**$5,238,590**		**$332,361**

Source: Wyoming Department of Revenue Annual Report—Fiscal Year 2001, Cheyenne, WY; Wyoming Taxpayers Association, Wyoming Property Taxation 2001, Cheyenne, WY.

Table 3-37. Estimated Severance Tax Production from JMH

Product	Annual Production (BBLs/MCF)	Taxable Valuation Per Unit	Assessed Valuation	Average Tax Per Unit of Production	Estimated Severance Tax
(1)	(2)	(3)	(4) = (2)*(3)	(5)	(6) = (4)*(5)
Oil	302	$24.47	$7,390	0.060	$443
Natural Gas	2,012,000	$2.60	$5,231,200	0.060	$313,872
Total			**$5,238,590**		**$314,315**

Source: Wyoming Department of Revenue Annual Report—Fiscal Year 2001, Cheyenne, WY.

Table 3-38. Estimated Federal Royalties Production From JMH

Product	Annual Production (BBLs/MCF)	Taxable Valuation Per Unit	Assessed Valuation	Federal Royalty Rate	Estimated Federal Royalties
(1)	(2)	(3)	(4) = (2)*(3)	(5)	(6) = (4)*(5)
Oil	302	$22.92	$6,921	0.125	$865
Natural Gas	2,012,000	$2.10	$4,234,656	0.125	$529,332
Total			$4,241,577		$530,197

Source: Wyoming Department of Revenue Annual Report—Fiscal Year 2001, Cheyenne, WY.

Note: The taxable valuation for oil and gas was decreased to account for allowable cost deductions taken by operators before paying federal royalties. Therefore, the taxable valuation per barrel of oil is 93.66% of total valuation and 80.95% of total valuation per mcf of natural gas.

3.10 ENVIRONMENTAL JUSTICE

Federal agencies are directed to consider the effects of their actions on minority populations and to determine the potential for the federal action to have disproportionately high and adverse human health or environmental impacts on such populations. E.O. 12898, Federal Action to Address Environmental Justice in Minority Populations and Low-Income Populations, guides this determination.

An environmental justice (EJ) population is defined by minority or low-income status. A minority is defined as Black or African American, Hispanic or Latino, Asian American, Native American, Alaska Native, Native Hawaiian, and other Pacific Islander. Low-income is defined by using annual statistical thresholds from the Bureau of the Census Current Population Reports.

The first step in evaluating potential environmental justice issues associated with BLM land management actions is to identify potential minority or low-income populations within the affected study area. Census data for Sublette, Fremont, and Sweetwater Counties and for the State of Wyoming were used to identify minority and low-income status. To determine whether the minority or low-income populations residing within the three counties constitute an EJ population, the following criteria were considered:

- At least one-half of the population is of minority status.
- At least one-half of the population is of low-income status.
- Minority status population in the study area is at least 10 percentage points higher than for the State of Wyoming.
- Low-income status population in the study area is at least 10 percentage points higher than for the State of Wyoming.

The population distribution by minority status in the three counties is summarized in Table 3-39. Figure 11 shows the minority population for each county in the State of Wyoming. Fremont and Sweetwater Counties have minority populations above the state average, whereas the minority population in Sublette County is well below the state average.

Table 3-39. Percent Population By County

County	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Hispanic or Latino
Sublette	97.5	0.2	0.5	0.2	0.1	1.9
Fremont	76.5	0.1	19.7	0.3	0.0	4.4
Sweetwater	91.6	0.7	1	0.6	0.0	9.4
Wyoming	92.1	0.8	2.3	0.6	0.1	6.4

Source: U.S. Bureau of Census, 2000.

The minority population of Fremont County is more than 10 percentage points above the state average because of the Native American population that resides in the county on and near the Wind River Reservation. Further analysis of the population by race by census track for 2000 indicated that the Native American population within Fremont County is concentrated in the northeast corner of the county and that minority populations in census tracks nearest the planning area are very small. Although portions of Fremont County would be defined as an EJ population, these areas are not likely to be impacted by actions within the planning area, given the geographic distance between the reservation and the planning area. Sublette and Sweetwater Counties do not meet the criteria for an EJ population in terms of minority communities.

Figure 12 summarizes the median household income and poverty rates for each county in Wyoming based on the 2000 Census. The median household income in Sublette and Sweetwater Counties is above the state average, while poverty levels are lower than elsewhere in the state. This indicates the absence of low-income populations within these two counties. Fremont County has a lower median household income and higher poverty rates than throughout Wyoming. However, the low-income population in Fremont County does not meet one of the four criteria for classification as an EJ population.

It is concluded that the study area does not support an EJ population; thus, no such population would be affected by any management alternative in a disproportionately high or adverse manner compared with the general population. Therefore, no further discussion or analysis of impacts will be conducted.

Table 3-1. Estimated Acres for JMH Resources

Resource Category	Resources	Acres
General Planning Area	JMH CAP planning area	622,340
	Core area	90,740
Land Status	Bureau of Land Management	574,810
	Bureau of Reclamation	1,980
	State of Wyoming	29,720
	Private	15,840
Wild Horse Herd Management Area	Great Divide Basin HMA (within JMH CAP planning area)	221,930
Water Resources	Wetlands, riparian areas, and 100-yr floodplains + 500-foot buffer	112,990
	Wetlands, riparian areas, and 100-yr floodplains + 250-foot buffer	59,110
	Wetlands, riparian areas, and 100-yr floodplains + ¼-mile buffer	273,510
	Recharge areas	80,640
	Great Divide Basin Watershed	190,940
	Colorado-Green River Watershed	376,360
	Platte-Sweetwater River Watershed	54,950
	Public water reserves	6,740
Big Game Sensitive areas	Elk crucial habitat	175,020
	Deer crucial habitat	52,070
	Antelope crucial habitat	81,550
	Elk birthing areas	91,470
	Deer birthing areas	36,350
	Connectivity area	301,320
Sensitive Avian Resources	Raptor nest sites (active)	930
	Raptor nest sites + ¼-mile buffer	8,550
	Raptor nest sites + ½- to 1-mile buffer	46,150
	Greater sage-grouse leks + ¼-mile buffer	3,900
	Greater sage-grouse leks + ½-mile buffer	14,270
	Greater sage-grouse leks + 2-mile buffer	149,980
	Potential greater sage-grouse nesting habitat (leks + 1 mile)[1]	33,150
	Potential greater sage-grouse nesting habitat (leks + 2 miles)[1]	98,400
	Potential greater sage-grouse nesting habitat (Proposed JMH CAP)[1]	266,440
	Greater sage-grouse concentration areas	170,590
	Greater sage-grouse winter concentration areas	420
	Greater sage-grouse winter range[2]	72,920
	Mountain plover aggregation areas	120
	Mountain plover aggregation areas + ¼-mile buffer	1,410
Sensitive Plant Resources	Aspen	2,570
	Basin big sagebrush/lemon scurfpea	23,600
	Special status plants	3,240
	Large-fruited bladderpod	3,080
	Meadow pussytoes	70
	Nelson's milkvetch	80

Table 3-1. Estimated Acres for JMH Resources (Continued)

	Special status plants potential habitat	5,640
	Cushion plant communities	4,340
Grazing Allotments	Bar X	6,550
	Bush Rim	98,790
	Chilton Place	210
	Continental Peak	89,940
	Crookston Ranch	50
	Fourth of July	7,270
	Hay Meadow	720
	Houghton	370
	Johnson Place	90
	Middle Hay	400
	Pacific Creek	196,390
	Red Desert	77,150
	Rock Springs	3,550
	Sands	104,860
	Steamboat Mountain	35,770
Special Management Areas		
Wilderness Study Areas (WSA)	All WSAs	119,340
	Buffalo Hump	9,520
	Sand Dunes	28,170
	Alkali Draw	17,950
	South Pinnacles	10,860
	White Horse Creek	4,700
	Oregon Buttes	5,820
	Honeycomb Buttes	41,920
Areas of Critical Environmental Concern (ACEC)	All ACECs	146,930
	Steamboat Mountain ACEC	48,350
	Northern portion	8,760
	Southern portion	39,620
	Lava rock portion	3,050
	Greater Sand Dunes ACEC	41,640
	Eastern portion	13,380
	Western portion	28,260
	Oregon Buttes ACEC	3,440
	South Pass Historic Landscape ACEC	53,480
	Visible portion	23,740
	Portion not visible	29,740
	White Mountain Petroglyphs ACEC	20
Special Recreation Management Areas (SRMA)	Greater Sand Dunes	41,640
	Developed recreation sites and OHV parking lot	50
	Recreation Area	10,020
	National Historic Trails + ¼-mile buffer	19,940

Table 3-1. Estimated Acres for JMH Resources (Continued)

Resource Category	Resources	Acres
Other Management Areas	Red Desert Watershed Management Area	179,310
	Steamboat Mountain Management Area	95,400
Heritage Resources	Paleosol deposition area	19,840
	South Pass Summit	5,260
	Indian Gap	690
	Boars Tusk	30
	White Mountain Petroglyphs	20
	White Mountain Petroglyphs vista	510
	National Historic Trails + ¼-mile buffer	19,940
	Split Rock	13,300
	Tri-Territory Marker	20
	Crookston Ranch	40
	Expansion Era Roads + ¼-mile buffer	10,110
	Rock art sites	1
	Pinnacles Geographic Area	8,950
	Pinnacles Geologic Feature	1,340
	Pinnacles proper	660
Geologic Hazards	Slopes > 25%	30,500
	Geologic hazards	30,550
Mineral Status	All federal minerals	574,830
	State and privately owned minerals	45,520
	Federal coal	2,090
Minerals (general)	Coal classification lands (to be revoked)	396,380
	Oil shale classification lands (to be revoked)	125,660
	Existing valid oil and gas leases	233,030
	Land in core area not covered by existing leases	43,750
	Steamboat Mountain diamond potential area	960
Mining Claim Activity	Active mining claims (existing claims)	7,600
	Abandoned mining claims	386,280
Coal/Sodium Development Potential	Brine potential development area	11,410
	Coal occurrence and development potential area	53,310
Coalbed Gas Development Potential	Tertiary	69,060
	Cretaceous	203,910
Oil and Gas Potential	High potential	274,690
	Moderate potential	150,420
	Low potential	77,440
	Exploratory unit	54,710
	Producing unit	8,600

[1] Only 50 percent of the area is expected to be suitable nesting habitat.

[2] Only sagebrush vegetation is expected to be suitable habitat

Table 3-6. Underground Water Class

Use Suitability Constituent or Parameter	I Domestic Concentration[1]	II Agriculture Concentration[1]	III Livestock Concentration[1]
Aluminum (Al)	---	5.0	5.0
Ammonia NH_3-N)	0.5	---	---
Arsenic (As)	0.05	0.1	0.2
Barium (Ba)	1.0	---	---
Beryllium (Be)	---	0.1	---
Boron (B)	0.75	0.75	5.0
Cadmium (Cd)	0.01	0.01	0.05
Chloride (Cl)	250.0	100.0	2,000.0
Chronium (Cr)	0.05	0.1	0.05
Cobalt (Co)	---	0.05	1.0
Copper (Cu)	1.0	0.2	0.5
Cyanide (CN)	0.2	---	---
Flouride (F)	1.4-2.4	---	---
Hydrogen Sulfide (H_2S)	0.05	---	---
Iron (Fe)	0.3	5.0	---
Lead (Pb)	0.05	5.0	0.1
Lithium (Li)	---	2.5	---
Manganese (Mn)	0.05	0.2	---
Mercury (Hg)	0.002	---	0.00005
Nickel (Ni)	---	0.2	---
Nitrate (NO_3-N)	10.0	---	---
Nitrite (NO_2-N)	1.0	---	10.0
Nitrite (NO_3+NO_2)-N	---	---	100.0
Oil & Grease	Virtually free	10.0	10.0
Phenol	0.001	---	---
Selenium (Se)	0.01	0.02	0.05
Silver (Ag)	0.05	---	---
Sulfate (SO_4)	250.0	200.0	3,000.0
Total Dissolved Solids	500.0	2,000.0	5,000.0
Uranium (U)	5.0	5.0	5.0
Vanadium (V)	---	0.1	0.1
Zinc (Zn)	5.0	2.0	25.0
pH[2]	6.5-9.0 s.u.	4.5-9.0 s.u.	6.5-8.5 s.u.
SAR	---	8	---
RSC[3]	---	1.25 meq/l	---
Combined Total Radium 226 and Radium 228[4]	5 pCi/l	5 pCi/l	5 pCi/l
Total Strontium 90[4]	8 pCi/l	8 pCi/l	8 pCi/l
Gross alpha particle radioactivity (including radium 226 but excluding radon and uranium)[4]	15 pCi/l	15 pCi/l	15 pCi/l

[1] mg/l, unless otherwise indicated
[2] measured in standard units (s.u.)
[3] meq/l = milliequivalents per liter
[4] pCi/l = picoCuries per liter

Source: State of Wyoming, Department of Environmental Quality. "Water Quality Rules and Regulations," Chapter VIII.

Notes: Milligrams per liter, abbreviated mg/l, means milligrams of solute per liter of solution—equivalent to parts per million assuming unit density of water.

Standard unit (abbreviated s.u.) is the unit of measurement used to describe the numerical pH of a solution, fluid, or pollutant.

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Milliequivalents per liter (abbreviated meq/l) used to report the residual sodium carbonate concentration in water used for irrigation, is defined as 0.001 of the equivalent weight of the ion per liter volume.

Picocuries per liter (abbreviated pCi/l) is a measure of radioactivity of waters or fluids. A picocurie is equal to 10^{-12} curie; a curie is defined as 3.7×10^{10} disintegrations per second.

pH is a term to express the intensity of the acid or basic condition. A pH value of 7.0 at 25 degrees centigrade is neutral, with pHs of less than 7.0 progressively more acid and pHs of greater than 7.0 progressively more basic.

Residual sodium carbonate (abbreviated RSC) is defined as twice the concentration of carbonate or bicarbonate water would contain after subtracting an amount equivalent to the calcium plus the magnesium; RSC is a measure of the potential hazard that exists when waters high in carbonate and bicarbonate and relatively low in calcium and magnesium are used for irrigation.

Sodium adsorption ratio (abbreviated SAR) of water is defined by the U.S. Department of Agriculture Laboratory (1954) as—

$$SAR = \frac{(Na+)}{\sqrt{\frac{(Ca^{\pm 2})+(Mg^{\pm 2})}{2}}}$$

where ion concentrations are expressed in milliequivalents per liter. The SAR predicts reasonably well the degree to which irrigation water tends to enter into cation-exchange reactions in soil.

Total dissolved solids (abbreviated TDS) is the sum of the dissolved mineral constituents in water, expressed as mg/l.

The Rock Springs Field Office does not routinely test for all parameters listed in the DEQ guidelines. The choice of test parameters is based on known potential hazards and information needed for ongoing studies and monitoring

Table 3-7. Allotment/Operator Data

Allotment	Operator	Class of Livestock	Permitted Use			5-year Historic Use	Percent of Allotment in JMH	Estimated Permitted Active Use in JMH	Estimated 5-Year Historic Use in JMH[a]
			Active	Suspended	Total				
4th of July	D. Mines	C	836	532	1,368	240	30	251	72
Johnson Place	D. Mines	C	10	0	10	10	100	10	10
Crookston Ranch	DeLambert	C	4	0	4	4	100	4	4
Hay Meadow	Blair & Hay	C	91	0	91	91	100	91	91
Pacific Creek	DeLambert	C	5	0	5[b]	5	100	5	5
	Magagna Brothers	S	22	0	22[b]	22		22	22
	Blair & Hay	C	8,859	4,526	13,385	3,925		8,859	3,925
	Robert & Martha Hellyer	S	10	0	10[b]	0		10	0
	G&E Livestock	S	38	0	38[b]	0		38	0
	Bar X Sheep	S	15	0	15[b]	0		15	0
	White Acorn	C	90	0	90[b]	0		90	0
Bar X	Bar X Sheep	C	468	0	468	446	99	468	442
Continental Peak	Robert & Martha Hellyer	C,S	5,728	1,001	6,729	1,697	100	5,728	1,697
	Bar X Sheep	S	41	0	41	0		41	0
	White Acorn	C	17	0	17[b]	0		17	0
Red Desert	Magagna Brothers	S	2,582	64	2,646	883	30	775	265
	Blair & Hay	C	4,171	6,539	10,710	427		1,251	128
	Robert & Martha Hellyer	S	716	0	716[b]	0		215	0
	Bar X Sheep	C	2,289	887	3,176	587		687	176
Bush Rim						38	100	63	38
	Magagna Brothers	S	63	0	63[b]	0		166	0
	Blair & Hay	S	166	0	166[b]	0		22	0
	Robert & Martha Hellyer	S	22	0	22[b]	921		3,026	921
	Bar X Sheep	C	3,026	2,456	5,482				

Table 3-7. Allotment/Operator Data (Continued)

Allotment	Operator	Class of Livestock	Permitted Use			5-year Historic Use	Percent of Allotment in JMH	Estimated Permitted Active Use in JMH	Estimated 5-Year Historic Use in JMH[a]
			Active	Suspended	Total				
Steamboat Mountain	Blair & Hay	S	80	0	80[b]	0		78	0
	D. Mines	C	848	1,210	2,058	260	97	823	252
Sands	Midland Dunton	S	217	20	237[b]	178	95	206	169
	DeLambert	C	1,257	354	1,611	1,257		1,194	1,194
	G&E Livestock	S	54	0	54[b]	20		51	19
	GZ Livestock-Chilton lease	C	1,789	866	2,655	1,615		1,700	1,534
	GZ Livestock	C	581	355	936	252		552	239
	Roberts Ranch	S	341	41	382	337		324	320
Rock Springs	Blair & Hay	C,S	1,637	133	1,770	1,818	0.22	3.6	0
	D. Mines-Chilton Lease	C	1,338	528	1,866			4	4
Middle Hay	Blair & Hay	C	16	0	16	16	100	16	16
Chiltons Place	D. Mines-Chilton Lease	C	15	0	15	15	100	15	15
Houghton Ranch	Chilton Land & Livestock	C	11	0	11	11	100	11	11
Total			44,818	19,512	55,430	15,107		26,830	11,569

Table 3-24. Wells Drilled in the JMH

SEC.	TWN.	DIR.	RNG.	DIR.	QTR/QTR	OPERATOR	UNIT/FIELD NAME	WELL NO.	SURF. ELEV.	ELEV. TYPE	TOTAL DEPTH	DEEPEST FORMATION	COMPL. DATE	COMP. STATUS
30	27	N	98	W	se se	CHORNEY OIL CO	CIRCLE BAR UNIT	1	7163	KB	10970	Mesaverde	19710914	P&A
3	27	N	99	W	sw nw	EUROPEAN SOUTHWEST CO	CONTINENTAL PEAK UNIT	1-3	7389	KB	5005	Tertiary	19820810	P&A
25	27	N	99	W	nw se	DAVIS OIL CO	HONEYCOMB BUTTES UNIT	1	7238	KB	13984	Rock Springs	19791008	P&A
26	27	N	99	W	sw sw	ENERGETICS INC	HARRIS SLOUGH UNIT	1-A	7241	KB	13620	Ericson	19810430	P&A
17	27	N	100	W	sw nw	AMOCO PRODUCTION CO	SOUTH PASS UNIT	1	7428	KB	22947	Morrison	19830413	P&A
30	27	N	100	W	c sw	BRITISH AMER OIL PROD CO		1	7742	KB	11012	Lewis	19600102	D&A
9	27	N	101	W	nw sw	SKINNER ROBERT E		1-9	7390	GR	3004	Tertiary	1978	D&A
9	27	N	101	W	ne sw	WEST COAST OIL CO iNC		1	7438	KB	9691		19770831	P&A
24	27	N	101	W	ne nw	SINCLAIR OIL & GAS CO	OREGON TRAIL UNIT	1	8085	GR	1858	Tertiary	19470821	P&A
24	27	N	101	W	sw nw	MOUNTAIN FUEL SUPPLY CO	DICKIE SPRINGS UNIT	1	8035	KB	12272	Mesaverde	19701003	P&A
29	27	N	102	W	se nw	SUPERIOR OIL CO		1	7034	GR	3458	Wasatch	19430825	
32	28	N	101	W	se nw	AMERICAN QUASAR PETR CO		1	7581	KB	15040	Mesaverde	19751106	P&A
36	28	N	102	W	nw se	AMERICAN QUASAR PETR CO	MONUMENT DRAW UNIT	36-33	7372	KB	3260	Tertiary	19811029	P&A
5	22	N	104	W	se sw	BRITISH AMER OIL PROD CO		1	6694	KB	3712	Ericson	19620120	D&A
1	22	N	105	W	sw sw	BRITISH AMER OIL PROD CO		1	7044	KB	5001	Ericson	19611119	D&A
5	22	N	105	W	lot 11	HUSKY OIL CO	EDEN UNIT	7-5	7233	KB	11036	Baxter	19730117	D&A
6	22	N	105	W	sw ne	HUSKY OIL CO	EDEN UNIT	7-6	6984	KB	9383	Ericson	19741013	P&A
11	22	N	105	W	sw nw	HUSKY OIL CO	EDEN UNIT	5-11	7693	KB	18150	Madison	19751030	D&A
1	23	N	101	W	ne ne	SUN RAY MID-CONT OIL CO	BIG DUNE UNIT	3	6996	KB	5720	Almond	19610929	D&A
4	23	N	101	W	se ne	DAVIS OIL CO	TREASURE UNIT	3	7204	KB	13966	Morrison	19810508	P&A
4	23	N	101	W	nw sw	CONOCO INC	BIG DUNE UNIT	4-1	7202	KB	5456	Ericson	19590211	D&A
3	23	N	102	W	se nw	WOODS PETROLEUM CORP	STEAMBOAT MOUNTAIN UNIT/FIELD	1	7632	KB	13044	Morrison	19781030	GAS
4	23	N	102	W	sw ne	WOODS PETROLEUM CORP	STEAMBOAT MOUNTAIN UNIT/FIELD	2	7855	KB	12850	Morrison	19790824	P&A
10	23	N	102	W	ne ne	WOODS PETROLEUM CORP		1	7996	KB	4517	Almond	19690809	D&A
11	23	N	102	W	se nw	WOODS PETROLEUM CORP	STEAMBOAT MOUNTAIN UNIT/FIELD	4	7862	KB	13025	Morrison	19811018	P&A
33	23	N	102	W	nw nw	TRITON OIL & GAS CORP	UNNAMED FIELD	3	7109	KB	4600	Blair	19900801	METH
33	23	N	102	W	ne ne	UNION PACIFIC RESOURCES	UNNAMED FIELD	2-33	7061	KB	4750	Blair	19950912	METH
1	23	N	103	W	se nw	MESA PETROLEUM CO		1	7980	DF	12091	Morrison	19731014	P&A
3	23	N	103	W	c sw	AQUITAINE OIL CORP	NITCHIE GULCH FIELD	13-3	7211	KB	10090	Lakota	19771118	GAS
4	23	N	103	W	ne sw	AQUITAINE OIL CORP	NITCHIE GULCH FIELD	1-4	7236	KB	10030	Dakota	19780325	GAS
5	23	N	103	W	nw nw	K W B PROPERTY MGMT INC	NITCHIE GULCH FIELD	2-5	7130	KB	9520	Morrison	19871229	GAS
5	23	N	103	W	sw ne	OKLAHOMA SILURIAN PTRS	NITCHIE GULCH FIELD	3-5	7205	KB	9693	Morrison	19900723	GAS
5	23	N	103	W	se sw	MCBRIDE W C INC	NITCHIE GULCH FIELD	1-5	7104	KB	9236	Dakota	19661119	GAS
6	23	N	103	W	se nw	TERRA RESOURCES INC	NITCHIE GULCH FIELD	2-6	6978	KB	9150	Morrison	19870222	GAS
6	23	N	103	W	ne ne	TERRA RESOURCES INC	NITCHIE GULCH FIELD	20-6	7087	KB	9361	Morrison	19890407	GAS
6	23	N	103	W	nw sw	PACIFIC ENT OIL CO USA	NITCHIE GULCH FIELD	30-6	6925	KB	9012	Morrison	19890918	O&G
6	23	N	103	W	c se	MCBRIDE W C INC	NITCHIE GULCH FIELD	1	7039	KB	9112	DakotA	19651107	GAS
7	23	N	103	W	se nw	TERRA RESOURCES INC	NITCHIE GULCH UNIT/FIELD	14-7	6999	KB	8400	Mowry	19841231	GAS
7	23	N	103	W	se nw	TERRA RESOURCES INC	NITCHIE GULCH UNIT/FIELD	19-7	7037	KB	9010	Morrison	19890315	GAS

Table 3-24. Wells Drilled in the JMH

SEC.	TWN.	DIR.	RNG.	DIR.	QTR/QTR	OPERATOR	UNIT/FIELD NAME	WELL NO.	SURF. ELEV.	ELEV. TYPE	TOTAL DEPTH	DEEPEST FORMATION	COMPL. DATE	COMP. STATUS
7	23	N	103	W	ne se	PACIFIC ENT OIL CO USA	NITCHIE GULCH UNIT/FIELD	22-8	6954	KB	9086	Morrison	19900411	GAS
7	23	N	103	W	ne se	AMAX PETROLEUM CORP	NITCHIE GULCH UNIT/FIELD	6-7	6968	KB	8950	Morrison	19650202	GAS
8	23	N	103	W	nw nw	TERRA RESOURCES INC	NITCHIE GULCH UNIT/FIELD	15-8	7002	KB	5840	Baxter	19850110	J&A
8	23	N	103	W	nw nw	TERRA RESOURCES INC	NITCHIE GULCH UNIT/FIELD	15-8X	7002	KB	8446	Mowry	19850606	GAS
8	23	N	103	W	nw se	AMAX PETROLEUM CORP	NITCHIE GULCH UNIT/FIELD	7-8	7031	KB	8930	Dakota	19651222	GAS
9	23	N	103	W	se nw	C R A INC	NITCHIE GULCH UNIT/FIELD	11-9	7064	KB	9150	Dakota	19680712	GAS
11	23	N	103	W	c nw	ELF AQUITAINE PETR INC		11-11	7322	KB	10254	Morrison	19780511	P&A
16	23	N	103	W	nw nw	TERRA RESOURCES INC	NITCHIE GULCH UNIT/FIELD	17-16	7063	KB	8870	Morrison	19870608	GAS
16	23	N	103	W	nw se	TRIGOOD OIL CO	NITCHIE GULCH FIELD	1	7096	GR	235	Tertiary	19620501	SUSP
16	23	N	103	W	se ne	C R A INC	NITCHIE GULCH FIELD	9-16	7184	KB	8966	Morrison	19671208	D&A
17	23	N	103	W	se se	TRIGOOD OIL CO	NITCHIE GULCH UNIT/FIELD	1	7134	KB	8713	Morrison	19611115	GAS
17	23	N	103	W	nw sw	AMAX PETROLEUM CORP	NITCHIE GULCH UNIT/FIELD	4-17	6949	KB	8750	Morrison	19631003	GAS
18	23	N	103	W	ne ne	TERRA RESOURCES INC	NITCHIE GULCH UNIT/FIELD	12-18	7031	KB	8200	Frontier	19831209	GAS
18	23	N	103	W	se nw	AMAX PETROLEUM CORP	NITCHIE GULCH UNIT/FIELD	8-18	6923	KB	8923	Morrison	19660124	GAS
19	23	N	103	W	se ne	PACIFIC ENT OIL CO USA	NITCHIE GULCH UNIT/FIELD	20-19	6925	KB	8660	Morrison	19890614	GAS
19	23	N	103	W	se nw	AMAX PETROLEUM CORP	NITCHIE GULCH UNIT/FIELD	5-19	6849	GR	8850	Morrison	19631231	GAS
20	23	N	103	W	nw nw	PACIFIC ENT OIL CO USA	NITCHIE GULCH UNIT/FIELD	13-20	7017	KB	8106	Mowry	19831206	GAS
20	23	N	103	W	nw se	TRIGOOD OIL CO	NITCHIE GULCH UNIT/FIELD	2-20	7084	KB	8596	Dakota	19620531	GAS
21	23	N	103	W	nw sw	PACIFIC ENT OIL CO USA	NITCHIE GULCH UNIT/FIELD	21-21	7145	KB	8620	Morrison	19900104	GAS
21	23	N	103	W	se nw	TRIGOOD OIL CO	NITCHIE GULCH UNIT/FIELD	3-21	7036	KB	8480	Dakota	19621201	GAS
22	23	N	103	W	sw nw	LUFF EXPL CO	PINE CANYON FIELD	3-22	7152	KB	8770	Morrison	19820215	P&A
22	23	N	103	W	se se	LUFF KENNETH INC	PINE CANYON FIELD	2-22	7265	KB	8849	Morrison	19771004	GAS
26	23	N	103	W	nw nw	LUFF KENNETH INC	PINE CANYON FIELD	4-26	7183	GR	8929	Morrison	19780510	GAS
27	23	N	103	W	ne nw	UNION PACIFIC RESOURCES	PINE CANYON FIELD	1	7420	KB	8830	Morrison	19870801	GAS
28	23	N	103	W	sw nw	TERRA RESOURCES INC	NITCHIE GULCH UNIT/FIELD	16-28	7290	KB	8731	Morrison	19860630	GAS
28	23	N	103	W	ne ne	B P EXPL INC	PINE CANYON FIELD	1-28	7427	KB	8875	Morrison	19890921	GAS
1	23	N	104	W	n/2 se	TEXAS OIL & GAS CORP	NITCHIE GULCH FIELD	1	6911	KB	9308	Morrison	19790303	GAS
1	23	N	104	W	ne ne	GULF OIL CORP	INDIAN GAP UNIT/NITCHIE GULCH FIELD	1	6936	DF	10066	Nugget	19551201	D&A
2	23	N	104	W	se se	TEXAS OIL & GAS CORP	NITCHIE GULCH FIELD	1	6442	GR	9770	Morrison	19790831	GAS
3	23	N	104	W	ne se	TEXAS OIL & GAS CORP	NITCHIE GULCH FIELD	1	6810	KB	9550		19801107	J&A
3	23	N	104	W	ne se	C & K PETROLEUM INC	NITCHIE GULCH FIELD	9-3	6830	KB	10765	Morrison	19810625	GAS
11	23	N	104	W	se ne	TEXAS OIL & GAS CORP	BOARS TUSK UNIT/NITCHIE GULCH FIELD	1	6891	KB	9554	Morrison	19810120	GAS
11	23	N	104	W	nw se	SUNSET INTL PETR CORP	NITCHIE GULCH FIELD	11-10	6829	KB	9585	Morrison	19670401	GAS
12	23	N	104	W	c ne	GRYNBERG JACK J	NITCHIE GULCH FIELD	20-12	6895	KB	8997		19890516	GAS
12	23	N	104	W	se se	AMAX PETROLEUM CORP	NITCHIE GULCH FIELD	1-12	6904	KB	8997	Morrison	19650911	GAS
13	23	N	104	W	sw ne	TERRA RESOURCES INC	NITCHIE GULCH FIELD	7-13	6876	KB	8400	Frontier	19730809	O&G
15	23	N	104	W	c se	F M C WYOMING CORP	BOARS TUSK UNIT/NITCHIE GULCH FIELD	1-15	6734	KB	10400	Morrison	19800313	D&A
16	23	N	104	W	sw sw	BOARS TUSK OIL CO		1	0		1529	Mesaverde	19271107	D&A
17	23	N	104	W	sw sw	HUSKY OIL CO		13-17	6717	KB	3300	Lance	19790604	P&A
23	23	N	104	W	w/2 se	F M C WYOMING CORP	NITCHIE GULCH FIELD	1-23	6763	BB	9681	Morrison	19790601	P&A

Table 3-24. Wells Drilled in the JMH

SEC.	TWN.	DIR.	RNG.	DIR.	QTR/QTR	OPERATOR	UNIT/FIELD NAME	WELL NO.	SURF. ELEV.	ELEV. TYPE	TOTAL DEPTH	DEEPEST FORMATION	COMPL. DATE	COMP. STATUS
26	23	N	104	W	w/2 sw	SOUTHLAND ROYALTY CO	NITCHIE GULCH FIELD	1-26	6713	KB	9914	Morrison	19770713	O&G
29	23	N	104	W	sw sw	HUSKY OIL CO		13-29	6732	GR	3117		19790514	P&A
31	23	N	104	W	se nw	HUSKY OIL CO		31-1	6849	KB	3382	Lance	19781129	P&A
2	24	N	100	W	lot 6	ROWAN DRLG CO INC		1	7077	KB	8970	Ericson	19620807	D&A
3	24	N	100	W	ne se	SOHIO PET CO		1	6946	KB	8660	Ericson	19700626	P&A
10	24	N	100	W	ne ne	CHEROKEE OIL & GAS CORP		1	6946	DF	218		19610809	D&A
12	24	N	100	W	sw sw	WOLF EXPL CO	PINNACLES UNIT	1	6999	KB	9000	Ericson	19670417	D&A
22	24	N	100	W	ne sw	WOODS PETROLEUM CORP	SADDLE BAG UNIT/FIELD	1	7058	KB	16542	Morrison	19821110	P&A
22	24	N	100	W	nw se	MONCRIEF W A JR	OASIS UNIT	1	7057	KB	16660	Morrison	19840515	P&A
28	24	N	101	W	se ne	H P C INC	TREASURE UNIT/FIELD	4	7544	KB	14930	Morrison	19820818	GAS
31	24	N	101	W	se nw	MOUNTAIN FUEL SUPPLY		1	7486	KB	5100	Almond	19640920	D&A
32	24	N	101	W	sw ne	HPC INC	TREASURE UNIT	2	7402	KB	14036	Morrison	19810909	P&A
33	24	N	101	W	ne sw	DAVIS OIL CO	TREASURE UNIT/FIELD	1	7673	KB	14426	Morrison	19800630	GAS
7	24	N	102	W	nw sw	GRYNBERG JACK & ASSOC		1-7	7406	KB	13676	Morrison	19730510	D&A
11	24	N	102	W	sw sw	SOUTHLAND ROYALTY CO		1	7267	KB	7000	Rock Springs	19730617	D&A
13	24	N	102	W	sw ne	WOODS PETROLEUM CORP	FREIGHTER GAP UNIT/FIELD	1	7610	KB	14623	Morrison	19810615	O&G
14	24	N	102	W	sw ne	WOODS PETROLEUM CORP	FREIGHTER GAP UNIT/FIELD	2	7340	KB	14130	Morrison	19840929	P&A
27	24	N	102	W	se ne	SAN JACINTO PETR CORP	MONUMENT RIDGE UNIT	1	7465	KB	7507	Blair	19630708	D&A
34	24	N	102	W	ne sw	WOODS PETROLEUM CORP	STEAMBOAT MOUNTAIN UNIT/FIELD	3	?	KB	13004	Morrison	19791129	P&A
2	24	N	103	W	ne nw	SHELL OIL CO	PLUNGE UNIT	21-2	7036	KB	5021	Ericson	19600316	D&A
4	24	N	103	W	se nw	WOLD JOHN S	INDIAN GAP UNIT	1	7081	DF	4011	Mesaverde	19570711	D&A
8	24	N	103	W	se nw	ENRON OIL & GAS CO	ESSEX MOUNTAIN FIELD	1-8	7298	KB	12281	Morrison	19920107	GAS
10	24	N	103	W	se nw	WOODS PETROLEUM CORP	RIM ROCK UNIT/FIELD	1	7171	KB	12657	Morrison	19801009	GAS
16	24	N	103	W	sw ne	MONCRIEF W A JR	RIM ROCK UNIT/FIELD	2	7278	KB	12230	Morrison	19871103	O&G
20	24	N	103	W	se nw	MCBRIDE W C INC		1	7227	KB	11421	Morrison	19670814	D&A
21	24	N	103	W	se nw	WOODS PETROLEUM CORP	NITCHIE GULCH FIELD	21-1	7443	KB	12042	Morrison	19820127	GAS
31	24	N	103	W	ne sw	TERRA RESOURCES INC	NITCHIE GULCH FIELD	30-31	6985	KB	9518	Morrison	19870803	GAS
31	24	N	103	W	nw nw	TERRA RESOURCES INC	NITCHIE GULCH FIELD	10-31	7056	KB	9872	Morrison	19880302	GAS
31	24	N	103	W	se se	TERRA RESOURCES INC	NITCHIE GULCH FIELD	40-31	7019	KB	9430	Morrison	19880505	P&A
31	24	N	103	W	ne sw	PACIFIC ENT OIL CO USA	NITCHIE GULCH FIELD	30-31F	6968	KB	8435	Frontier	19900504	GAS
32	24	N	103	W	ne nw	TERRA RESOURCES INC	NITCHIE GULCH FIELD	10-32	7065	KB	10038	Morrison	19880412	GAS
32	24	N	103	W	c se	ELF AQUITAINE PETR INC	NITCHIE GULCH FIELD	33-32	7098	KB	10051	Morrison	19810917	P&A
32	24	N	103	W	se sw	MCBRIDE W C INC	NITCHIE GULCH FIELD	1-32	7141	KB	9732	Dakota	19680623	D&A
33	24	N	103	W	c sw	AQUITAINE OIL CORP	NITCHIE GULCH FIELD	13-33	7215	KB	10465	Dakota	19780323	GAS
34	24	N	103	W	c sw	ELF AQUITAINE PETR INC	NITCHIE GULCH FIELD	13-34	7367	KB	11075	Dakota	19781007	GAS
1	24	N	104	W	se ne	BROWN H L JR		1-1	7605	KB	8104		19840701	P&A
24	24	N	104	W	se se	HOUSTON OIL & MIN CORP	ESSEX MOUNTAIN UNIT/FIELD	44-24	7056	GR	10700	Morrison	19801210	GAS
24	24	N	104	W	sw se	KIRBY ROYALTIES INC		1	7043	KB	5500	Baxter	19631114	D&A
25	24	N	104	W	se se	TERRA RESOURCES INC	NITCHIE GULCH FIELD	40-25	7046	KB	10049	Morrison	19880926	GAS
35	24	N	104	W	nw se	FLORIDA EXPL CO	NITCHIE GULCH FIELD	1-35	7019	KB	10100	Dakota	19810325	O&G

Table 3-24. Wells Drilled in the JMH

SEC.	TWN.	DIR.	RNG.	DIR.	QTR/QTR	OPERATOR	UNIT/FIELD NAME	WELL NO.	SURF. ELEV.	ELEV. TYPE	TOTAL DEPTH	DEEPEST FORMATION	COMPL. DATE	COMP. STATUS
36	24	N	104	W	sw ne	PERTO PACIFIC RESOURCES INC.	NITCHIE GULCH FIELD	1	7035	KB	752	Almond	19821025	P&A
36	24	N	104	W	c se	TERRA RESOURCES INC	NITCHIE GULCH FIELD	40-36	7056	KB	9500	Morrison	19870727	GAS
36	24	N	104	W	se ne	TERRA RESOURCES INC	NITCHIE GULCH FIELD	20-36	6985	KB	9650	Morrison	19871106	GAS
36	24	N	104	W	se sw	TERRA RESOURCES INC	NITCHIE GULCH FIELD	30-36	7085	KB	9700	Morrison	19880425	GAS
36	24	N	104	W	sw ne	ROCK HILL INDUSTRIES INC	NITCHIE GULCH FIELD	36-1	7026	KB	878	Almond	19690327	P&A
22	24	N	105	W	se nw	DAVIS OIL CO		1-2	6880	KB	7997	Ericson	19710111	D&A
20	25	N	99	W	ne sw	WOODS PETROLEUM CORP	LOST VALLEY UNIT	3	6944	KB	13738	Baxter	19791209	P&A
20	25	N	99	W	ne sw	MONCRIEF W A JR	LOST VALLEY UNIT	3	6944	KB	18723	Muddy	19830424	P&A
10	25	N	100	W	se ne	WOODS PETROLEUM CORP	CITATION UNIT	1	7013	KB	11000		19820413	P&A
19	25	N	100	W	sw sw	WOODS PETROLEUM CORP	CENTURION UNIT	1	7488	KB	8613	Almond	19810603	P&A
26	25	N	100	W	nw ne	SOHIO OIL CO		2	7037	KB	9250	Ericson	19710202	P&A
27	25	N	101	W	se nw	HUMBLE OIL & REFG CO	PARNELL CREEK UNIT	1	7531	GR	8500	Ericson	19611126	D&A
30	25	N	101	W	sw ne	DAVIS OIL CO	PIRATE UNIT	1	7339	KB	15590	Morrison	19810226	P&A
3	25	N	102	W	sw nw	PAN AMERICAN PETR CORP		1	7451	KB	5220	Lance	19640817	D&A
7	25	N	102	W	ne sw	SAXON EXPL CO	UNNAMED FIELD	7-11	7628	KB	6955	Mesaverde	19901111	METH
7	25	N	102	W	ne sw	H S RESOURCES INC	BIG BEAR UNIT/UNNAMED FIELD	11-7	7643	GR	15990	Morrison	19960107	OIL
9	25	N	102	W	sw nw	PAN AMERICAN PETR CORP		1	7372	KB	4901	Lance	19640801	D&A
17	25	N	102	W	sw nw	ATLANTIC REFG CO	PLUNGE UNIT	2	7501	KB	9803	Blair	19610823	D&A
26	25	N	102	W	se nw	SKELLY OIL CO		1	7229	DF	6998	Ericson	19581103	D&A
9	25	N	103	W	sw se	KERR MCGEE OIL IND INC	MORROW CREEK UNIT	1	7485	KB	7050	Lewis	19591019	P&A
13	25	N	103	W	ne ne	FREEPORT MINERALS CO		1-13	7506	GL	9868	Blair	19760828	P&A
23	25	N	103	W	sw se	SAXON EXPL CO		23-15	7606	GR	5955	Almond	19910724	P&A
24	25	N	103	W	nw se	WOODS PETROLEUM CORP	PACKSADDLE UNIT	1	7662	KB	14850		19790705	P&A
29	25	N	103	W	nw ne	EL PASO NATURAL GAS CO	MORROW CREEK UNIT	1	7153	KB	9598	Baxter	19541228	D&A
9	26	N	98	W	se nw	DAVIS OIL CO	SCOTTY LAKE UNIT	1	7086	KB	13150	Rock Springs	19790828	P&A
10	26	N	100	W	sw sw	WOODS PETROLEUM CORP	HOURGLASS UNIT	10-1	7247	KB	15300	Baxter	19801027	P&A
16	26	N	100	W	nw ne	MONCRIEF W A JR	SANDS OF TIME UNIT	1	7202	KB	11978	Rock Springs	19830518	P&A
25	26	N	100	W	n/2 ne	DAVIS OIL CO		1	7067	KB	11564	Rock Springs	19770408	P&A
8	26	N	101	W	sw sw	DAVIS OIL CO	MUSKETEER UNIT	1	7543	KB	19569	Morrison	19820321	P&A
23	26	N	102	W	sw se	DAVIS OIL CO	BUCCANEER UNIT/FIELD	1	7346	KB	17844	Dakota	19811114	GAS
30	26	N	102	W	sw sw	GULF OIL CORP	MORROW CREEK UNIT	1	7214	GR	8212	Ericson	19670116	D&A
34	26	N	102	W	se se	GULF OIL CORP	MORROW CREEK UNIT	2	7301	GR	8500	Ericson	19670715	D&A
3	26	N	103	W	n/2 n/2	RAINBOW RESOURCES INC	GREATER PACIFIC CREEK UNIT	1-3	6970	GR	15000		19800623	P&A
25	26	N	103	W	sw ne	WOODS PETROLEUM CORP	ROCK CABIN UNIT	1	7258	KB	18777	Morrison	19810926	P&A

CHAPTER 4—ENVIRONMENTAL CONSEQUENCES

The "federal action" is the selection of a coordinated activity plan (CAP) on which future Bureau of Land Management (BLM) land use actions would be based. The purpose of this chapter is to determine the potential for significant impact of the federal action on the human environment. As defined in 40 Code of Federal Regulations (CFR) §1508.14, the "human environment" is interpreted comprehensively to include natural and physical resources and the relationship of people with those resources.

This chapter discusses the effects each alternative could have on various environmental, socioeconomic, and land use program areas (see Table 2-4 at the end of Chapter 2 for summary of impacts). Analysis of the alternatives has focused on identifying types of impacts and estimating their potential significance. The impact analysis for the No Action Alternative was prepared first as the baseline for the alternatives analysis. It contains a detailed discussion of impacts used for comparison with other alternatives. Where impacts are the same among alternatives, reference is made to those alternatives so that impacts are not repeated. However, the analysis under the Proposed Jack Morrow Hills (JMH) CAP does not make such references, and impacts are fully discussed.

4.1 TYPES OF IMPACTS

The terms "impact" and "effect" are synonymous. Impacts can be direct, indirect, or cumulative. A direct impact is caused by an action and occurs at the same time and place. An indirect impact occurs later in time or is farther removed in distance, but it is related to the action by a chain of cause and effect. Indirect impacts may reach beyond the natural and physical environment (i.e., environmental impact) to include growth-inducing effects and other effects related to induced changes to resource users (i.e., nonenvironmental impact).

An impact can be adverse or beneficial. An impact is considered adverse when the outcome of the action results in undesirable effects. A beneficial impact can result if the current condition is improved. Although beneficial impacts are identified, the analysis focuses on those impacts that are adverse in determining whether the effects are significant or insignificant. The criteria used to differentiate between significant and insignificant effects are introduced in the next section.

Adverse impacts can be mitigated through avoidance, minimization, restoration, reduction, or compensation. Mitigation measures are considered when identifying and implementing management actions and when determining and comparing impacts. Impacts may be reduced to less-than-significant levels if mitigation guidelines and standard practices are implemented. Mitigation measures may be imposed by regulation or through BLM policies and may be applied broadly or site-specifically. Standard practices and mitigation guidelines that would be implemented for particular activities are described in Appendices 5 and 6.

Cumulative impacts can result from individually minor but collectively significant actions' taking place over time. The Council on Environmental Quality (CEQ) describes cumulative impacts as follows:

> *The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.*

- The cumulative impact analysis for this environmental impact statement (EIS) evaluates the potential impacts associated with the JMH alternatives, in combination with the potential impacts associated with other relevant activities that have occurred, are occurring, or may occur in the vicinity of the JMH CAP area. Cumulative impacts are discussed in Section 4.13 of this chapter.

4.2 DETERMINATION OF SIGNIFICANCE

The concept of significance used in this chapter encompasses several factors, including the magnitude of change from existing conditions and the likelihood of the change to occur. The context and the intensity of the impact are also considered. Context relates to the environmental circumstances at the location of the impact; intensity refers to the severity or extent of an impact.

In evaluating the context of an impact, the area or quantity of an affected resource relative to the available area or quantity of that resource is considered. The potential for change in growth and reproductive success of a species, maintenance of a population at preproject levels, and period of recovery after disturbance are other factors considered. The intensity of an impact is dependent on several factors, including the potential for violation of laws or regulations; the degree of uncertainty and controversy; the degree of adverse effect on specific concerns such as public health and safety, unique resources, or threatened and endangered species; and the resilience of the resource.

Determining significance is complex. The significance of a resource or impact is dynamic and may change during the planning period. Significance can be "real" and supportable by fact or "perceived" and perhaps not fully supportable even through rigorous study. For this analysis, the approach for establishing significance criteria was based on legal issues, public perception, and professional judgment. Significance criteria are introduced in the specific resource categories.

4.3 ANALYSIS METHODS

Impact analysis is a cause and effect process. Analysis methods identified resources that would be considered important for reasons such as legality, uniqueness, availability, or resilience, and then predicted changes to these resources. The magnitude or scale of the resource change was defined, and a judgment made as to the significance of that change.

Potential impacts of certain land use activities can be compared visually and numerically among the alternatives by using geographic information system (GIS) coverages and databases. The locations of resources and overlapping issues are shown in Maps 1 through 87. The approximate geographic size of these resources is listed in Table 3-1 at the end of Chapter 3, and the magnitudes of the overlapping resource issues are compared among the alternatives in Tables 4-1 to 4-10 at the end of Chapter 4. These tables and maps should be reviewed in conjunction with the discussion of impacts in the following sections.

Environmental impacts associated with the management alternatives are caused by land use activities. Certain assumptions are made regarding level of land use activity, resource condition, and resource response as a basis for determining potential impacts. The analysis considered the following:

- Restrictions or prohibitions on activities in specific areas to protect sensitive resources
- Mitigation requirements that prevent or limit direct impacts associated with land use activities or that reclaim the land after the activity has been completed

- Standards and guidelines that assess rangeland health and provide strategies to achieve resource conditions and management objectives
- Projections of the level of activity for land uses based on historical trends; existing land use agreements, such as leases or permits; and statements of interest in land use by individuals and industry organizations
- Impacts of land use activities that occur regardless of location of the land use, and impacts dependent on the location of the activity and potentially affected resources.

BLM manages public lands for multiple uses in accordance with the Federal Land Policy and Management Act (FLPMA). Land use decisions are made that protect the resources while allowing different uses of those resources, such as livestock grazing, energy development, and recreation. Where there are conflicts between resource uses, or where a land use activity might result in unacceptable or irreversible impacts on the environment, BLM may restrict or prohibit some land uses in specific areas. To ensure that BLM meets its mandate of multiple use in land management actions, the impacts of the alternatives on resource users (albeit nonenvironmental impacts) are identified and assessed as part of the planning process. The projected impacts on land use activities and the associated environmental impacts of land uses are characterized and evaluated for each management alternative in the following sections. It is important to note that all management prescriptions for each resource and resource use directly and/or indirectly relate to each other; therefore, impacts of other prescriptions and guidance may apply to each resource management activity.

4.4 LAND AND WATER RESOURCES

The land and water resource management category encompasses the biological and hydrologic resources and the users and land use programs associated with those resources. The significance criteria and analysis assumptions are described within each subcategory.

4.4.1 Potential Impacts on Fire

The fire management program is a land use program that has both adverse and beneficial environmental impacts on resources and nonenvironmental effects on resource users. Impacts on resources and resource users resulting from implementation of the fire management program are discussed in those particular resource sections. This section describes potential impacts on the fire management program resulting from the implementation of management actions for other resource management categories.

Adverse impacts on the fire management program would be considered significant if management actions or activities increased the costs related to the fire management program to the point where the overall effectiveness of the program was reduced.

It is assumed that a direct relationship exists between density of human use within the planning area and the frequency of person-caused fires and that a direct relationship exists between fuel loads (standing and nonstanding vegetation) and potential fire size and intensity. Prescribed burns would be limited throughout the planning area and planning period. The potential for land treatments through the use of prescribed fire would be limited. Some areas of dense overmature Wyoming and mountain big sagebrush could benefit from planned ignitions. The amount of area to be treated with prescribed fire is not expected to exceed 5,000 acres over the 20-year planning period.

4.4.1.1 Common to All Alternatives

The management actions associated with the alternatives would primarily impact the fire management program by affecting costs associated with prescribed burns and wildfire suppression efforts. Program costs would increase because of increased fire frequency and increased fire size and/or intensity. The level of significance of any impact would depend on the number of wildfires occurring in any given year. Adhering to the Fire Management Implementation Plan for BLM-Administered Public Lands and the National Fire Plan would assist in maintaining the program as planned and budgeted.

Activities that would affect fire frequency under all alternatives include off-highway vehicle (OHV) use, recreational activity, livestock grazing, and mineral exploration and development. These activities introduce additional ignition sources into the planning area, which in turn increase the probability of wildfire occurrence. The activities can occur in remote areas, which would affect the time and cost related to transporting fire suppression equipment to such locations. Livestock grazing can also affect fire frequency by reducing fine fuels, which decreases the probability of ignition. This could benefit the fire management program by decreasing fire fighting costs but could also adversely impact the opportunity for positive effects of fire.

Fire size and intensity can be affected by the level of fire suppression activities allowed and by activities that increase or decrease fuel loading. The restrictions and limitations placed on fire suppression activities within special management areas and around heritage sites could adversely affect the ability of firefighters to protect these sites from wildfires. However, limiting suppression activities to existing roads and trails could reduce suppression-related costs by focusing suppression efforts on existing fuel breaks.

Livestock grazing could also increase fire intensity by decreasing fire frequency. Decreasing the probability of ignition through the reduction of fine fuels could provide more time for the accumulation of larger fuel sources (e.g., shrub vegetation) between fires. When properly managed, livestock grazing activity would leave sufficient fine fuel to allow for ignition. Excessive removal of fine fuels caused by overgrazing could lead to increased brush size and density, which could also increase fire intensity. However, this is not anticipated because of the implementation of the Wyoming Standards for Healthy Rangelands and the desired plant community (DPC) objectives, which would ensure that widespread overgrazing would not occur. Fine fuel reduction by grazing livestock could also adversely impact fire prescription activities by limiting the ability of an area to support prescribed fire as a management tool.

Factors affecting the costs associated with prescribed burns include restrictions on vehicle and other equipment use, construction of control lines in areas of sensitive resources, and timing requirements for burns in sensitive watersheds. Approximately 5,000 acres of prescribed burns are proposed over the planning period. Any adverse impacts on the fire management program due to prescribed burning would be minimal, because there should be adequate planning, timing, and budgeting for this type and level of activity.

4.4.1.2 No Action Alternative

Mineral exploration, development and production increase the potential for wildfire occurrence by increasing the number of ignition sources, which in turn increases the cost of managing fire within the planning area. Development of 221 oil and gas wells is anticipated under this alternative (Appendix 13), which would act as potential ignition sources throughout the planning area. Closing areas to fluid mineral development under this alternative (Map 10) would diminish development activity and consequently reduce adverse impacts on the fire management program.

Recreational activities such as camping and OHV use have the potential to increase fire frequency by increasing the number of ignition sources (e.g., campfires and catalytic converters). Further, because these activities often occur in remote areas, costs related to transporting fire suppression equipment could increase. Under this alternative, camping would be allowed throughout the planning area (except where necessary to protect water quality and wildlife), which could increase fire management costs by increasing fire activity over a large area. Limiting OHV use to designated and existing roads and trails could minimize the potential for fires ignited by these vehicles.

The impacts of wild horse management actions on the fire management program would be somewhat similar to those resulting from livestock grazing, but on smaller scale and over a smaller area. Management of wild horses could reduce fine fuels through foraging activities and thereby reduce the probability of ignition. This could also increase fire intensity by providing more time for the accumulation of larger fuel sources (e.g., shrub vegetation) between fires. Excessive removal of fine fuels could lead to increased brush size and density, which could increase fire intensity. However, this is not anticipated because of the implementation of the Wyoming Standards for Healthy Rangelands and DPC objectives, which would ensure that widespread overuse would not occur.

Vegetation management actions could have both beneficial and adverse impacts on the fire management program. Beneficial impacts could result from reducing fire size and/or intensity by maintaining healthy and diverse vegetation communities. Highly diverse vegetation communities promote mosaic vegetation patterns that slow the spread of fires. Beneficial impacts would also be realized by applying full fire suppression in basin big sagebrush/lemon scurfpea vegetation associations, which would help reduce fire size and/or intensity. Adverse impacts could include increased costs related to prescribed burn stipulations (e.g., spring burning) and fire suppression restrictions within certain sensitive vegetation resources (e.g., vehicular suppression activities limited to existing roads and trails within special status plant species habitat). Using prescribed burns as a vegetative treatment would be planned in advance and thus should not significantly impact the fire management program.

4.4.1.3 Alternative 1

Impacts on the fire management program from implementing management actions for wild horses and vegetation would be the same as those under the No Action Alternative.

Although camping activities are anticipated to be similar to those of the No Action Alternative, increased OHV use would be expected within the planning area because there would be more available areas in which to travel. This would increase the potential for increased fire frequency and related costs.

This alternative provides the greatest opportunity for mineral development and production, which could affect fire management. More of the planning area would be open to all types of mineral exploration and development, which could increase the potential for human-caused fires by increasing the number of ignition sources. However, the increased and/or improved access and construction of fuel breaks resulting from increased mineral activities could improve suppression opportunities and effectiveness. The level of significance of these impacts would depend on the fire frequency in any given year.

Under this alternative, the anticipated use of livestock animal unit months (AUM) would increase over the planning period to the permitted active use amount, which is approximately double the historic use. This would increase the impacts of livestock grazing on the fire management program.

Activities related to special management areas under this alternative could reduce localized effects on fire management. Removing the area of critical environmental concern (ACEC) designation from Steamboat Mountain ACEC and reducing the South Pass Historic Landscape viewshed would eliminate the specific management actions associated with these areas, which would in turn reduce the area subject to fire suppression-related limitations and restrictions.

4.4.1.4 Alternative 2

Impacts on the fire management program from implementing management actions for vegetation would be the same as those under the No Action Alternative.

The Divide Basin Wild Horse Herd Management Area (HMA) would be reduced to exclude the planning area. This would remove from the planning area wild horses that would otherwise affect the fire management program through the reduction of fine fuels.

Recreation management activities could have less of an impact on fire management under this alternative than under the No Action Alternative. Camping would be allowed only in designated areas, and parties of five or more would require a group camping permit. Such restrictions would concentrate camping activities, thereby controlling the areas that could be adversely impacted by escaped campfires or other accidental ignitions. A large portion of the planning area would be closed to OHV use or subject to OHV limitations. These limitations would likely decrease fire frequency related to human recreational activity and have an overall beneficial effect on the fire management program.

This alternative provides the least opportunity for mineral development and production, which would result in reduced impacts on fire management compared with all other alternatives. More areas would be closed to all types of mineral development, which would decrease the potential for wildfire occurrence by reducing the number of ignition sources.

Activities related to special management areas could have greater impacts on the fire management program under this alternative than under the other alternatives. Management actions associated with the expansion of existing ACECs and historic viewsheds and management of new ACECs within the planning area could increase the area subject to fire suppression-related limitations and restrictions, which could increase related costs and reduce the ability of firefighters to protect these sites from wildfires. However, limiting suppression activities to existing roads and trails could reduce suppression-related costs by focusing suppression efforts on existing fuel breaks. The level of significance of these impacts would depend on the number of wildfires occurring in these special management areas in any given year.

4.4.1.5 Alternative 3

Impacts on the fire management program from implementing management actions for vegetation would be the same as those under the No Action Alternative.

Recreation management activities could have less of an impact on fire management under this alternative than under the No Action Alternative. Camping would be allowed only in designated areas, and parties of 10 or more would require a group camping permit. Such restrictions would concentrate camping activities, thereby controlling the areas that could be affected by escaped campfires or other accidental ignitions. Additional portions of the planning area would be closed to OHV use or subject to OHV limitations. These limitations would likely decrease fire frequency related to human recreational activity and, consequently, the cost of managing fire within the planning area.

Impacts on the fire management program from mineral development would be slightly less than under the No Action Alternative, because of development of fewer oil and gas wells. Development of 205 wells is anticipated under this alternative (Appendix 13), which would act as potential ignition sources throughout the planning area. Closing areas to fluid mineral development under this alternative (Map 42) would diminish development activity and consequently reduce adverse impacts on the fire management program.

Expanding the Divide Basin Wild Horse HMA to include the entire planning area could increase the beneficial and/or adverse effects associated with wild horses (reduction of fine fuels via foraging) on the fire management program by allowing wild horses to graze more areas. However, this additional impact would not be significant because the number of horses allowed in the expansion area would be limited.

Impacts related to special management areas would be similar to those under Alternative 2, but not as great. Management actions associated with fewer designations and less expansion of special management areas under this alternative would result in fewer limitations and restrictions on fire suppression activities.

4.4.1.6 Proposed JMH CAP

The management actions associated with this alternative would impact the fire management program primarily by affecting costs associated with prescribed burns and wildfire suppression efforts. Program costs would increase because of increased fire frequency and increased fire size and/or intensity. Adhering to the Fire Management Implementation Plan for BLM-Administered Public Lands and the National Fire Plan would assist in maintaining the program as planned and budgeted.

Management of heritage resources could adversely impact fire management by placing restrictions on fire suppression activities. Protections afforded to heritage resources and surrounding areas include fire suppression-related limitations and restrictions, which could affect the ability of firefighters to protect these sites from wildfires. However, limiting suppression activities to existing roads and trails could reduce suppression-related costs by focusing these efforts on existing fuel breaks. The level of significance of these impacts would depend on the number of wildfires occurring in these areas in any given year.

Prescribed burning could adversely affect the fire management program by increasing costs. Factors could include restrictions on vehicle and other equipment use, construction of control lines in areas of sensitive resources, and timing requirements for burns in sensitive watersheds. Approximately 5,000 acres of prescribed burns are proposed over the 20-year planning period. Any adverse impacts on the fire management program due to prescribed burning would be minimal because there should be adequate planning, timing, and budgeting for this type and level of activity.

Mineral exploration, development, and production increase the potential for wildfire occurrence by increasing the number of ignition sources, which in turn increases the cost of managing fire within the planning area. Impacts on the fire management program under this alternative would be similar to those under Alternative 3, with development of 205 wells (Appendix 13). However, the strategy for implementing fluid mineral leasing decisions under this alternative (Appendix 17) could affect the degree of impact in certain areas. There would be no new oil and gas leasing in the majority of Area 3 (Figure A17-1), which could reduce impacts in this area over the long term. However, this could also result in more rapid exploration and development of existing leases in Area 3 because there would not be any opportunity to renew leases upon expiration. Moreover, given that much of this area is within the high development potential area (Map 69), successful well completion rates are expected to be high. These factors could result in the introduction of substantially more ignition sources over a relatively short period of time, potentially increasing impacts on fire management compared with Alternative 3.

Recreational activities such as camping and OHV use have the potential to increase fire frequency by increasing the number of ignition sources (e.g., campfires and catalytic converters). Furthermore, because of the remote areas in which these activities often occur, costs related to transporting fire suppression equipment might increase. Under this alternative, camping would be allowed throughout the planning area (except where necessary to protect water quality and wildlife), which could increase fire management costs by increasing fire activity over a larger area. Placing limitations on OHV use and closing certain areas to such use could minimize the potential for fires ignited by these vehicles.

Livestock grazing can affect fire frequency by reducing fine fuels, which decreases the probability of ignition. This could benefit the fire management program by decreasing fire fighting costs but could also adversely impact the opportunity for positive effects of fire. Livestock grazing could also increase fire intensity by decreasing fire frequency. Decreasing the probability of ignition through reduction of fine fuels could provide more time for the accumulation of larger fuel sources (e.g., shrub vegetation) between fires. When properly managed, livestock grazing activity would leave sufficient fine fuel to allow for ignition. Excessive removal of fine fuels caused by overgrazing could lead to increased brush size and density, which could also increase fire intensity. However, this is not anticipated because of the implementation of the Wyoming Standards for Healthy Rangelands and DPC objectives, which would ensure that widespread overgrazing would not occur. Fine fuel reduction by grazing livestock could also adversely affect fire prescription activities by limiting the ability of an area to support prescribed fire as a management tool.

Impacts of wild horse management actions on the fire management program would be somewhat similar to those resulting from livestock grazing, but on smaller scale and over a smaller area. Management of wild horses could reduce fine fuels through foraging activities and thereby reduce the probability of ignition. This could also increase fire intensity by providing more time for the accumulation of larger fuel sources (e.g., shrub vegetation) between fires. Excessive removal of fine fuels could lead to increased brush size and density, which could increase fire intensity. However, this is not anticipated because of the implementation of the Wyoming Standards for Healthy Rangelands and DPC objectives, which would ensure that widespread overuse would not occur.

Vegetation management actions could have both beneficial and adverse impacts on the fire management program. Beneficial impacts could result from reducing fire size and/or intensity by maintaining healthy and diverse vegetation communities. Highly diverse vegetation communities promote mosaic vegetation patterns that slow the spread of fires. Beneficial impacts would also be realized by applying full fire suppression in basin big sagebrush/lemon scurfpea vegetation associations, which would help reduce fire size and/or intensity. Negative impacts could include increased costs related to prescribed burn stipulations (e.g., spring burning) and fire suppression restrictions within certain sensitive vegetation resources (e.g., vehicular suppression activities limited to existing roads and trails within special status plant species habitat). Using prescribed burns as a vegetative treatment would be planned in advance and thus should not significantly impact the fire management program.

Activities related to special management areas and other management areas could result in greater impacts on the fire management program than under the No Action Alternative. Management actions associated with the expansion of the Steamboat Mountain ACEC and management of the West Sand Dunes Archaeological District and Steamboat Mountain Management Area could increase the area subject to fire suppression-related limitations and restrictions, which could increase related costs and affect the ability of firefighters to protect these areas from wildfires. However, limiting suppression activities to existing roads and trails could reduce suppression-related costs by focusing these efforts on existing fuel breaks. The level of significance of these impacts would depend on the number of wildfires occurring in these special management areas in any given year.

4.4.2 Potential Impacts on Water Resources

Water resources include surface and subsurface water resources and the quality of each. Resources include perennial, intermittent, and ephemeral waterways; riparian areas; wetlands; floodplains; groundwater recharge areas; and groundwater. Impacts on resources and resource users resulting from implementation of water resource management actions are discussed in those particular resource sections. This section describes potential impacts on water resources resulting from the implementation of management actions for other resource management categories.

Adverse impacts on water resources as a result of human activities would be considered potentially significant if proper functioning condition (PFC) could not be attained or maintained as a minimum physical state or if Wyoming BLM Standards for Healthy Rangelands Standard #2 were not obtainable. Actions that accelerated erosion and runoff and thereby altered the physical characteristic of streams, wetlands, and riparian areas or degraded water quality beyond the designated use of the receiving stream (Table 3-5) would be considered a significant impact. Any loss of wetlands or wetland function or violation of the requirements of Section 404 permits would also be considered a significant impact.

Analysis of impacts on water resources is based on achieving the watershed objectives of stabilizing and conserving soil; increasing vegetative production; maintaining or improving surface and groundwater quality; and protecting, maintaining, or improving wetlands, floodplains, and riparian areas.

It is assumed that any substantial disturbance to the soils or changes in vegetative cover would have an adverse effect on watershed health and water quality. Surface disturbances result in accelerated erosion and runoff, increasing sediment and nutrient loads to local channels. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, soil type, time and degree of disturbance, existing vegetation, and precipitation.

4.4.2.1 Common to All Alternatives

Fire could have both long-term beneficial and short-term adverse impacts on water resources, the degree of which would depend on fire size, timing, and fuel type. Adverse impacts could include increased runoff from exposed soils and sedimentation of surface waters. Over the long term, positive impacts could include increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor, which would slow erosion rates and improve watershed health and water quality. Wildfires usually have more adverse impacts than do prescribed burns because wildfires generally cover larger areas and remove more vegetation, and, if burning outside established prescription, often burn with enough heat to adversely affect soil organisms and damage the root system of some plants. This could result in long-term adverse impacts by compromising future plant rejuvenation and growth rates. Fire suppression activities could also result in adverse impacts on water resources by increasing soil erosion from fire line construction and heavy equipment transport. Prescribed fires generally result in long-term beneficial effects on watershed health and water quality. The significance of any impact would depend on the amount of area burned, fire type, proximity to a water source, amount of sedimentation, and rate of revegetation.

Riparian areas would be managed to attain PFC as the minimum acceptable level of ecological condition. This would have a beneficial impact on watershed resources and water quality by helping to stabilize streambanks, reduce erosion and sediment yield, promote vegetative cover, and enhance water quality. Watershed assessments, increased monitoring efforts, and implementation of mitigation measures would improve the health of watersheds with sensitive baseline conditions, having a long-term beneficial impact on the resource. Water quality would be further protected through BLM's participation with federal, state, and local government agencies to develop and implement salinity control plans for the Colorado River Basin.

Livestock grazing could have localized adverse impacts on watershed resources and water quality. Soil compaction and loss of vegetative cover could result in reduced soil infiltration, increased runoff, and sedimentation of surface waters. Other potential adverse impacts from livestock grazing activities could include channel destabilization, nutrient loading of surface waters, and promotion of invasive plant species. In addition, surface alterations and water depletions resulting from development of livestock pits, ponds and water wells could alter flow dynamics and cause overall degradation of the riparian corridor (see Appendix 3 and Section 4.4.6 for further details). Approximately 80 percent of the water used for livestock water developments would be from the Colorado River drainage, with the remaining amount coming from the Platte River drainage. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing and DPC objectives would help ensure proper management of livestock resources and reduce adverse impacts on watershed resources and water quality.

Livestock water developments and range improvements would be designed to improve resource conditions and livestock distribution. They generally distribute livestock within the pasture/allotment in an effort to prevent livestock concentration and overuse of forage. The immediate area surrounding water developments would generally be adversely affected because of construction disturbances and livestock concentrations around the developments. This would accelerate runoff and erosion within the affected area and could adversely impact nearby surface waters by increasing sediment and nutrient loads. With proper planning and effective management of range improvements, adverse impacts on water resources would be minimized to acceptable levels.

Vegetation management activities would most likely result in beneficial impacts on watershed resources and water quality. The protective measures afforded to special status plant species and management actions to achieve the DPC objectives would have a beneficial effect on watershed resources by maintaining plant diversity and preserving ecological conditions. Preventing and controlling the spread of invasive plant species would also improve watershed health by reducing competition with native plants and maintaining biodiversity. Vegetation manipulation to enhance wildlife habitat would have short-term, adverse impacts on watershed resources by removing vegetation and consequently increasing erosion and sedimentation; however, long-term, beneficial impacts could be realized through increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor.

Long-term beneficial impacts on water resources are anticipated from wildlife habitat management activities. Actions to improve wildlife habitat generally involve the protection of water sources and the promotion of diverse plant communities, which are better able to slow and filter overland flow, reduce erosive forces, and improve water quality. Short-term adverse impacts could occur where wildlife populations concentrate near water sources, potentially increasing erosion and sediment loads.

Management of heritage resources should have minimal impacts on watershed health and water quality. Management actions generally focus on the protection or preservation of heritage sites, which would in turn benefit water resources by limiting or excluding surface disturbing activities on or near such sites. Data recovery excavations could adversely affect watershed resources through surface disturbances and vegetation removal if not properly conducted. Indirect effects could occur if avoidance of cultural sites directed activities to other areas, possibly concentrating uses and increasing adverse impacts on local watersheds. However, because of the limited activity allowed in proximity to water resources, any adverse impacts would be insignificant. Protection measures afforded by the National Historic Preservation Act would further mitigate potential adverse impacts.

Recreational activities that occur in proximity to water sources could impact watershed resources and water quality. Camping and hiking adjacent to waterways could result in localized compaction of soils, vegetation removal, and streambank instability, which in turn could increase sediment, salt, and nutrient loads from increased runoff. Waste products from recreational activities near riparian areas could have localized adverse effects on aquatic resources. The use of OHVs could have an adverse impact on water resources, especially if the OHVs were used in an unauthorized manner. Such impacts could include erosion, soil compaction, and increased turbidity from unauthorized stream crossings and use of wetland meadows. OHV use limitations and visitor compliance with BLM's OHV designations would help prevent degradation of sensitive watersheds. Educational programs, such as "Tread Lightly," would further help reduce adverse impacts on land and water resources.

Surface disturbing activities, such as those associated with the construction of linear rights-of-way (ROW) for pipelines, transmission lines, and communication lines, and oil and gas development, including construction of well pads, mud pits, and roads, could impact water resources. Land clearing and grading activities necessary for construction remove vegetation and compact soils, which contributes to increased erosion and subsequent sedimentation of local surface waters. Water depletions from oil and gas drilling processes would reduce the total volume of flows to the Colorado River and Platte River drainages (see Appendix 3 and Section 4.4.6 for further details). Approximately 95 percent of the water used for drilling would be from the Colorado River drainage (i.e., 95 percent of the wells would be within this watershed), with the remaining amount coming from the Platte River drainage. Implementation of standard practices and mitigation measures would help minimize long-term adverse impacts on water resources by stabilizing soil conditions and promoting revegetation of disturbed areas. Disturbed sites would be monitored for effective reclamation, and linear ROWs would avoid or be excluded from sensitive areas whenever possible. If sensitive areas could not be avoided, appropriate mitigation measures would be applied.

Groundwater could be affected during construction of drill pads or by other exploration and development activities. Improper casing and cementing of wells, undetected spills, or leachate from produced water or mud pits could introduce contaminants into the groundwater. Chemicals used for production drilling could cause local contamination of soils and groundwater if not managed properly. Construction of drilling pads, proper disposal practices, proper casing and cementing, and recycling of drilling fluids would be in accordance with BLM guidelines and should minimize adverse effects on groundwater quality. Hydrological investigations would be conducted before coalbed gas development to determine whether any connection existed between surface waters and the aquifer that would be dewatered. Appropriate measures would be taken to prevent adverse impacts on water quality during dewatering. Dewatering during coalbed gas production could affect the quantity of groundwater by changing flow gradients. Given the present state and federal regulations regarding general water quality, as well as salinity and the Colorado River Basin, surface discharge of produced water is not anticipated. However, accidental surface discharges could adversely impact nearby surface water quality by increasing salinity levels. The extent of any impact would depend on the quality and quantity of the produced water and any fluids being released.

Irrigation diversions on private lands have a noticeable influence on channel dynamics and morphology. Pacific Creek, the primary stream system in the JMH CAP planning area, has been under the influence of irrigation diversions for close to 100 years. Irrigation diversions will most likely continue to be a noticeable influence in the future.

Management actions for special management areas could benefit watershed resources. Restrictions on development and other surface disturbing activities within these areas would help prevent accelerated erosion and sedimentation of surface waters.

4.4.2.2 No Action Alternative

Prescribed burns and wildfire suppression activities would have both short-term and long-term impacts on water resources like those described above under Impacts Common to All Alternatives. The minimal amount of proposed prescribed burns (approximately 5,000 acres) and the requirements for these activities (e.g., post-treatment rest, mosaic patterns, and limiting of suppression activities to existing roads and trails) would minimize adverse impacts by limiting the amount of exposed ground susceptible to erosion. The long-term benefits from fire would be minimized as well. Full fire suppression would be applied to basin big sagebrush/lemon scurfpea vegetation associations, which stabilize the sand dunes and maintain the integrity and stability of the watershed in which they grow.

Achieving and maintaining the appropriate management level (AML) for wild horses within the Divide Basin Wild Horse HMA would serve to maintain or improve watershed resources. Some trampling of riparian vegetation and subsequent erosion would occur, but this could be held to an acceptable level if the selective gathering program were successful in reducing and maintaining wild horse population levels. Concentration of wild horses near water sources could increase localized erosion and sediment loads caused by trampling and overgrazing of riparian vegetation. Construction of water developments to better distribute the horse herd would help minimize this effect.

Livestock grazing activities could impact water resources as described above in Impacts Common to All Alternatives. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing would ensure that adverse impacts would not be significant. Under this alternative, exclosures and water developments would be constructed as needed to keep livestock out of sensitive riparian areas, thereby reducing the impacts on watershed health and water quality. Prohibiting placement of salt and mineral supplements within 500 feet of riparian areas would help minimize soil compaction and subsequent runoff near surface waters.

Recreational activities are not anticipated to have significant impacts on watershed resources. Although camping would be allowed within riparian corridors, areas would be closed if resource damage occurred, thereby preventing significant impacts. In addition, OHV use designations would help prevent OHV-related impacts from becoming significant.

Surface disturbing activities, such as those associated with mineral development and ROW construction activities, could cause impacts similar to those common to all alternatives. Actions that limit the extent of surface disturbing activities generally minimize impacts on surface water sources and recharge areas. Under this alternative, surface disturbance would be controlled within 500 feet of riparian areas, wetlands, and 100-year floodplains. Controlled use means that surface disturbing activities would avoid these areas unless a site-specific analysis determined that there would be no adverse impacts on water resources. Permanent facilities (other than linear facilities) would not be allowed within 100-year floodplains or wetland areas, and linear ROWs would be identified and collocated as much as practicable. These limitations would ensure that any adverse impacts on water resources would not be significant. Some surface disturbing activities might serve to maintain or improve water quality (e.g., reconstruction of crossings, road surfacing, gabions).

Development of 221 oil and gas wells is anticipated under this alternative, with 95 percent of these wells occurring in the Green River/Colorado River Basin. Using the assumption of 1.5 acre-feet of water per well, depletions from these actions would total approximately 390 acre-feet in the Colorado River drainage and 16.5 acre-feet in the Platte River drainage. Based on a 20-year time frame, the average annual depletion for the two drainages would be 19.5 acre-feet and 0.83 acre-feet, respectively.

4.4.2.3 Alternative 1

Impacts resulting from management actions for fire, recreation, and wild horses would be the same as those under the No Action Alternative.

Livestock grazing management would likely have greater impacts on water resources under this alternative than under the No Action Alternative. The anticipated use of AUMs would increase over the planning period to the fully permitted active use amount, which is approximately double the historic use. This could put greater pressure on watershed resources, potentially causing increased erosion, sedimentation, and bank instability. These additional impacts would be realized only on allotments that are not currently close to using their fully permitted AUMs. In addition, under this alternative, salt and mineral supplements could be placed within 250 feet of water resources (compared with the 500-foot minimum distance under the No Action Alternative), and would therefore have a greater potential for subjecting surface waters to increased sediment loads. Livestock water developments would be permitted wherever they enhanced livestock production, as opposed to enhancing livestock distribution as under the No Action Alternative. This could increase localized erosion and sedimentation of surface waters, possibly resulting in significant impacts. Existing riparian exclosures could be removed under this alternative and the area made available to livestock grazing, consequently increasing grazing pressures along riparian corridors. This could result in degradation to these riparian areas depending on current livestock management. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing would help minimize adverse impacts.

Benefits to watershed resources from wildlife management actions would be less extensive than under the other alternatives because there would be less emphasis on improving wildlife habitat and fewer habitat protection measures under this alternative.

Of the five alternatives, this alternative would provide the least amount of protection to riparian areas and floodplains from surface disturbing activities, which could result in an increase in related impacts. The amount of land area subject to the controlled surface use stipulation would be reduced. Specifically, the avoidance area surrounding riparian areas and 100-year floodplains would be reduced to 250 feet, allowing surface disturbing activities to occur closer to water resources. Similarly, the avoidance area for intermittent and large ephemeral drainages would be reduced to 50 feet. New permanent facilities would be allowed in floodplains, wetlands, and riparian areas provided that no practicable alternatives were available for placing the facility elsewhere and that appropriate mitigation measures would be implemented. The level of significance of impacts would depend on whether the buffer zones were large enough to adequately attenuate impacts related to surface disturbing activities.

Additional land area would be open for linear ROWs under this alternative, which could allow increased construction activities to occur within sensitive watersheds. This could cause further degradation of watershed resources and water quality, and depending on where and to what degree the ROW activities occurred, impacts could be significant.

It is assumed that the amount of mineral exploration and development that would occur during the planning period would be related to the amount of acreage available for such development. The land area available for lease and mining claims would be greatest under this alternative; thus, the potential for mineral development would likely increase. This would result in greater surface disturbance and related adverse impacts on water resources because of increased potential for exposed soils, erosion, runoff, sedimentation of surface waters, and salt and nutrient loading. Development of more wells would also increase annual water depletions from the Colorado River and Platte River drainages. Using the assumption of 1.5 acre-feet of water per well over the 20-year planning period and development of 264 wells, water depletion from these activities would total approximately 451.5 acre-feet in the Colorado

River drainage and 19.5 acre-feet in the Platte River drainage. Based on a 20-year time frame, the average annual depletion for the Colorado River and Platte River drainages would be 22.5 acre-feet and 0.98 acre-feet, respectively. The level of significance for all of these impacts would depend on the rate and location of development activities and the rate and effectiveness of reclamation.

Management activities related to special management areas under this alternative could reduce opportunities to maintain or improve water resources. Removing the ACEC designation from Steamboat Mountain ACEC and reducing the South Pass Historic Landscape viewshed would eliminate specific management actions associated with these areas, which would in turn reduce the area subject to surface disturbance restrictions and limitations, potentially reducing benefits to water resources.

4.4.2.4 Alternative 2

Impacts resulting from vegetation management would be the same as those under the No Action Alternative.

Under this alternative, the fire management program would have similar impacts to those discussed under the No Action Alternative. However, prescribed burns would not be considered under this alternative, which would eliminate both the positive and negative impacts of this activity. In addition, limited fire suppression (as opposed to full suppression) would be applied to the basin big sagebrush/lemon scurfpea vegetation associations, which could increase their susceptibility to fire. This could result in destabilization of the sand dunes and related impacts on water resources. In contrast, reducing the level of disruptive fire suppression activities could actually result in less erosion and less subsequent sedimentation of surface waters.

Adverse impacts from wild horse management actions could occur in the portion of the Divide Basin Wild Horse HMA located outside the planning area. Under this alternative, the HMA would be modified to exclude the planning area while maintaining the current AML for the herd. Although this would benefit water resources within the planning area, indirect adverse impacts could occur in the remainder of the HMA because of the concentration of approximately the same number of wild horses within a smaller area.

Under this alternative, livestock grazing management would most likely have fewer impacts on water resources than under the other alternatives. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels. Salt and mineral supplements would not be allowed within one-half mile of riparian resources, thereby further reducing related impacts. Whether the one-half-mile distance would provide greater protection to riparian areas than would some shorter distance could depend on the topography, drainage patterns, and vegetative cover at a particular location. Within sensitive wildlife habitat, livestock water developments would be allowed only if resource conditions were improved. This could benefit water resources through improved planning of such developments. Moreover, only 11 water developments would be constructed under this alternative (compared to 23 under all other alternatives), which would lessen annual water depletions (2.8 acre-feet versus 5.75 acre-feet) from the Colorado River and Platte River drainages. Exclosures would be maintained and new ones constructed as needed to keep livestock out of sensitive riparian areas, which would maintain or improve riparian corridors.

Beneficial impacts on watershed resources from wildlife management activities would likely be greatest under this alternative because of expanded protection of and habitat enhancement for wildlife resources. Specifically, placing a no surface occupancy (NSO) stipulation on big game birthing areas and greater sage-grouse winter range and concentration areas would limit the type and degree of surface disturbing activity occurring in these areas, thereby reducing erosion, runoff, and sedimentation of surface waters.

Increased protection would be afforded to heritage resources under this alternative, which could increase beneficial impacts on watershed resources and water quality as compared to the other alternatives. Buffer zones around most sites eligible for inclusion in the National Register of Historic Places (NRHP) would be increased to 300 feet. Because surface disturbing activities are prohibited within these buffers, the potential for erosion and sedimentation of surface waters would be reduced.

Recreation management activities would have less of an adverse impact on watershed resources and water quality under this alternative than under all other alternatives. Camping would be allowed only in designated areas, and parties of five or more would require a group camping permit. Such restrictions would limit camping along streams and within sensitive areas, reducing related impacts on water resources. The area closed to OHV use would increase, thus reducing the potential for accelerated erosion and sedimentation related to OHV use.

Of the five alternatives, this alternative would provide the most protection to water resources from surface disturbing activities, primarily because a greater amount of land area would be subject to NSO requirements or ROW exclusion. Any actions that limit the extent of surface disturbing activities help minimize adverse impacts on surface water sources and recharge areas. Surface disturbance would be controlled within one-quarter mile of riparian areas, wetlands, and 100-year floodplains. Permanent facilities would not be allowed in 100-year floodplains, riparian areas, or wetlands, and linear ROWs would be identified and collocated as much as practicable. This larger avoidance area surrounding riparian areas and floodplains could provide considerably more protection to water resources. The degree of adverse impact would depend on the size and type of the activity and on the topography and drainage patterns of the activity location. This alternative would also include site-specific management prescriptions to protect the ecological integrity of the dunal ponds (flockets), which would have a beneficial effect on this unique water resource. Opportunities to construct structures that could enhance watershed resources (e.g., gabions, fences) would be limited in this alternative.

It is assumed that the amount of mineral exploration and development that would occur during the planning period under this alternative would be related to the amount of acreage available for such development. The land area available for lease and mining claims would be the most restrictive under this alternative; thus, the potential for mineral development would likely decrease. Withdrawing areas from mineral development reduces the degree to which surface disturbance can occur, which in turn reduces adverse impacts on watershed resources and water quality. Development of fewer wells would considerably lessen annual water depletions from the Colorado River and the Platte River drainages. Using the assumption of 1.5 acre-feet of water per well over the 20-year planning period and development of 163 wells, water depletions from these actions would total approximately 270 acre-feet in the Colorado River drainage and 12 acre-feet in the Platte River drainage. Based on a 20-year time frame, the average annual depletion for the Colorado River and Platte River drainages would be 13.5 acre-feet and 0.6 acre-feet, respectively.

Management actions related to special management areas could have a greater beneficial effect on water resources under this alternative. Management actions associated with expansion of existing ACECs and historic viewsheds and management of new ACECs within the planning area could increase the area subject to surface disturbance restrictions and limitations, and thus limit potential adverse impacts resulting from exposed soils and subsequent erosion and surface runoff.

4.4.2.5 Alternative 3

Impacts resulting from management of the fire program and vegetation resources would be the same as those under the No Action Alternative.

Expanding the Divide Basin Wild Horse HMA to include the entire JMH CAP planning area could better distribute wild horses and reduce use in riparian areas within the current HMA. In contrast, this action could have additional adverse impacts on riparian areas because more of these areas would be included in the expanded HMA. Introducing wild horse grazing activities to new areas could result in overuse of riparian habitat, leading to accelerated erosion and sedimentation of water resources. Ensuring that no more than 100 horses were allowed in the expansion area could minimize this effect. However, this would likely not be realized until herd levels reached and maintained the AML because wild horses currently inhabit areas outside the existing HMA boundary.

Livestock grazing activities under this alternative could have adverse impacts on water resources similar to those under the No Action Alternative. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing would ensure that adverse impacts on water resources from grazing practices would not be significant. Exclosures and water developments would be constructed as needed to keep livestock out of sensitive riparian areas, which would have a beneficial impact on watershed health and water quality. Prohibiting placement of salt and mineral supplements within one-quarter mile of riparian areas would minimize soil compaction that promotes runoff and sedimentation of surface waters. Whether the distance of one-quarter mile would be adequate to prevent adverse impacts on riparian areas or would be excessive would depend on topography, drainage patterns, and the amount of vegetative cover at a particular salt block location.

Benefits to watershed resources from wildlife management activities would most likely increase under this alternative compared with the No Action Alternative because of expanded protection and habitat enhancement for wildlife resources.

Recreation management activities under this alternative would have less impact on watershed resources and water quality than would those under the No Action Alternative. Dispersed camping would be allowed only in designated areas, and parties of 10 or more would require a group camping permit. Such restrictions would limit camping along streams and within sensitive areas, reducing related impacts on water resources. Impacts would likely be more extensive than under Alternative 2 because measures designed to limit adverse impacts would not be as restrictive. The amount of area closed to OHV use or limited to existing roads and trails would be less than that under Alternative 2, which could increase the potential for soil exposure, accelerated erosion, and sedimentation of water sources. The level of significance of this impact would depend on the concentration of OHV use in proximity to water sources and watersheds of concern.

This alternative would provide more protection to water resources from surface disturbing activities than would the No Action Alternative and Alternative 1, primarily because greater land area would be subject to controlled surface use requirements, ROW exclusion areas, or management under a transportation plan. Any actions that limit the extent of surface disturbing activities would help reduce adverse impacts on surface water sources and recharge areas. Under this alternative, surface disturbance would be controlled within 500 feet to one-quarter mile of riparian areas, wetlands, and 100-year floodplains. Permanent facilities would not be constructed in 100-year floodplains, and linear ROWs would be identified and collocated as much as practicable. Defining the boundaries of groundwater recharge areas within the JMH CAP planning area would ensure that appropriate measures would be taken in these locations to protect groundwater quantity and quality.

It is assumed that the amount of mineral development that could occur during the planning period would be related to the amount of acreage available for such development. Therefore, reducing available acreage (i.e., closing areas to mineral exploration and development) would serve to diminish surface disturbance and consequently reduce adverse impacts on watershed resources and water quality. Impacts on water resources from mineral development would be similar to but slightly less than those under the No Action Alternative, with development of 205 oil and gas wells (compared to 221 wells under the No Action Alternative). Although adverse impacts (exposed soils, erosion, and sedimentation) would be anticipated in localized areas, the health of watersheds would be used as an indicator in determining when to limit further development to ensure adverse impacts remained insignificant.

Impacts related to special management areas would be similar to those of Alternative 2, but not as great. Management actions associated with fewer designations and less expansion of special management areas under this alternative could result in fewer limitations and restrictions on surface disturbing activities.

4.4.2.6 Proposed JMH CAP

Fire could have both long-term beneficial and short-term adverse effects on water resources under this alternative, the degree of which would depend on fire size, timing, and fuel type. Adverse impacts could include increased runoff from exposed soils and sedimentation of surface waters. Over the long term, positive impacts could include increased age and species diversity of plant communities, enhanced nutrient cycling, and increased plant vigor, which would slow erosion rates and improve watershed health and water quality. Wildfires usually have more adverse impacts than do prescribed burns because wildfires generally cover larger areas and remove more vegetation, and, if burning outside established prescription, often burn with enough heat to adversely affect soil organisms and damage the root systems of some plants. This could result in long-term adverse impacts by compromising future plant rejuvenation and growth rates. Fire suppression activities could also result in adverse impacts through increased soil erosion resulting from fire line construction and heavy equipment transport. Prescribed fires generally result in long-term beneficial effects on watershed health and water quality. The significance of any impact would depend on the amount of area burned, fire type, proximity to a water source, amount of sedimentation, and rate of revegetation. The minimal extent of proposed prescribed burns (approximately 5,000 acres), and the requirements related to these activities under this alternative (e.g., post-treatment rest, mosaic patterns, and limiting suppression activities to existing roads and trails), would minimize short-term adverse impacts by limiting the amount of exposed ground susceptible to erosion. Full fire suppression would be applied to basin big sagebrush/lemon scurfpea vegetation associations, which stabilize the sand dunes and maintain the integrity and stability of the watershed in which they grow.

Riparian areas would be managed to attain PFC as the minimum acceptable level of ecological condition. This would have a beneficial impact on watershed resources and water quality by reducing erosion and sediment yield, promoting vegetative cover, stabilizing streambanks, and enhancing water quality. Watershed assessments, increased monitoring efforts, and implementation of mitigation measures would improve watersheds with sensitive baseline conditions, having a long-term beneficial impact on the resource. BLM would continue to participate with federal, state, and local government agencies to develop and implement salinity control plans for the basin and to maintain existing and future applicable water quality plans. Aquatic, wetland, and riparian habitat would not be disposed of unless exchanged for lands with equal or greater value (including monetary and functional resource values).

Livestock grazing could have localized impacts on watershed resources and water quality. Soil compaction and loss of vegetative cover could result in reduced soil infiltration and increased runoff and sedimentation of surface waters. Other potential adverse impacts from livestock grazing activities could include channel destabilization, nutrient loading of surface waters, and promotion of invasive plant species. In addition, surface alterations and water depletions resulting from development of livestock pits, ponds, and water wells could alter flow dynamics and cause overall degradation of the riparian corridor (see Appendix 3 and Section 4.4.6 for further details). Approximately 80 percent of the water used for livestock water developments would be from the Colorado River drainage, with the remaining amount coming from the Platte River drainage. Using 5 acre-feet per water development over the 20-year planning period, average annual depletions anticipated from these actions would not exceed 4.75 acre-feet for the Colorado River system and 1 acre-foot for the Platte River system. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing and the DPC objectives would help ensure proper management of livestock resources and reduce adverse impacts on watershed resources and water quality.

Certain requirements and mitigation measures for livestock grazing operations would further help minimize impacts. Livestock water developments and range improvements would be designed to improve resource conditions and livestock distribution. These activities generally distribute livestock within the pasture/allotment in an effort to prevent livestock concentration and overuse of forage. The immediate area surrounding water developments would generally be adversely affected because of construction disturbances and livestock concentrations around water developments. This would accelerate runoff and erosion within the affected area and could adversely impact nearby surface waters by increasing sediment and nutrient loads. With proper planning and effective management of range improvements, adverse impacts on water resources would be minimized to acceptable levels. Within sensitive wildlife habitat, livestock water developments would be allowed only if resource conditions were improved, which could benefit water resources through improved construction planning of such developments. Riparian exclosures would be constructed as needed to keep livestock out of sensitive riparian areas, thereby reducing impacts on watershed health and water quality. Prohibiting placement of salt and mineral supplements within 500 feet of riparian areas would help minimize soil compaction and subsequent runoff near surface waters.

Vegetation management activities would most likely result in beneficial impacts on watershed resources and water quality. The protections afforded to special status plant species and the management actions designed to achieve the DPC objectives would have a beneficial effect on watershed resources by maintaining plant diversity and preserving ecological conditions. Preventing and controlling the spread of invasive plant species would also improve watershed health by reducing competition with native plants and maintaining biodiversity. Vegetation manipulation to enhance wildlife habitat would have adverse short-term impacts on watershed resources by removing vegetation and consequently increasing erosion and sedimentation; however, long-term beneficial impacts could be realized by increasing age and species diversity of plant communities, enhancing nutrient cycling, and increasing plant vigor.

Long-term beneficial impacts on water resources are anticipated from wildlife habitat management activities. Actions to improve wildlife habitat generally involve the protection of water sources and the promotion of diverse plant communities, which are better able to slow and filter overland flow, reduce erosive forces, and improve water quality. Short-term adverse impacts could occur where wildlife populations concentrate near water sources, potentially increasing erosion and sediment loads. These beneficial impacts would likely increase over the No Action Alternative because of expanded protection measures for greater sage-grouse. Placing a controlled surface use stipulation on sage-grouse nesting habitat and increasing the amount of sage-grouse winter habitat would reduce the level of surface disturbing activities occurring in these areas, thereby reducing related erosion, runoff, and sedimentation of surface waters.

Management of heritage resources should have minimal impacts on watershed health and water quality. Management actions generally focus on the protection or preservation of heritage sites, which in turn benefit water resources by limiting or excluding surface disturbing activities on or near such sites. Data recovery excavations could adversely affect watershed resources via surface disturbances and vegetation removal if not properly conducted. Indirect effects could occur if avoidance of cultural sites directed activities to other areas, possibly concentrating uses and increasing adverse impacts on local watersheds. However, because of the limited activity allowed in proximity to water resources, any adverse impacts would be insignificant. Protection measures afforded by the National Historic Preservation Act would further mitigate potential adverse impacts. Impacts on water sources near the paleosol deposition area would most likely be less extensive than under the No Action Alternative because of the management of this area as an archeological district. Such management would increase protection from surface disturbing activities, thereby reducing adverse impacts on nearby water sources.

Recreational activities that occur in proximity to water sources could impact watershed resources and water quality, but significant impacts are not anticipated. Camping and hiking adjacent to waterways could result in localized compaction of soils, vegetation removal, and streambank instability, which in turn could increase sediment, salt, and nutrient loads from increased runoff. Waste products from recreational activities near riparian areas could have localized adverse effects on aquatic resources. Although camping would be allowed in riparian corridors, areas would be closed if resource damage occurred, thereby preventing adverse impacts from becoming significant. Requiring that special recreation use permits be reviewed and recommendations made by the Rock Springs Field Office would ensure input from field office resource specialists before authorization of special recreation activities. This could reduce impacts on water resources, because such activities would be directed by the personnel most familiar with the planning area.

Use of OHVs could have an adverse impact on water resources, especially if OHVs were used in an unauthorized manner. Impacts could include erosion, soil compaction, and increased turbidity from unauthorized stream crossings and use of wetland meadows. OHV use limitations and visitor compliance with BLM’s OHV designations would locally contain adverse impacts and help prevent degradation of sensitive watersheds. Implementation of educational programs such as the “Tread Lightly” program would further help to reduce adverse impacts on land and water resources.

Surface disturbing activities, such as those associated with the construction of linear ROWs for pipelines, transmission lines, and communication lines, and oil and gas development, including construction of well pads, mud pits, and roads, could impact water resources. Land clearing and grading activities necessary for construction would remove vegetation and compact soils, which would contribute to increased erosion and subsequent sedimentation of local surface waters. Water depletions from oil and gas drilling processes would reduce total volume of flows to the Colorado River and Platte River drainages (see Appendix 3 and Section 4.4.6 for further details). Approximately 95 percent of the water used for drilling would be from the Colorado River drainage (i.e., 95 percent of the wells would be within this watershed), with the remaining amount coming from the Platte River drainage. Using the assumption of 1.5 acre-feet of water per well, water depletion from these actions would total approximately 367.5 acre-feet in the Colorado River drainage and 15 acre-feet in the Platte River drainage. Based on a 20-year time frame, the average annual depletion for the Colorado River and the Platte River drainages would be 18.4 acre-feet and 0.75 acre-feet, respectively.

Implementation of standard practices and mitigation measures would help minimize long-term adverse impacts on water resources by stabilizing soil conditions and promoting revegetation of disturbed areas. Disturbed sites would be monitored for effective reclamation, and linear ROWs would avoid or be excluded from sensitive areas whenever possible. If sensitive areas could not be avoided, appropriate mitigation measures would be applied. Surface disturbance would be controlled within 500 feet of riparian areas, wetlands, and 100-year floodplains. Controlled use means that surface disturbing activities would avoid these areas unless a site-specific analysis determined that there would be no adverse impacts on water resources. Permanent facilities (other than linear facilities) would not be allowed in 100-year floodplains, or riparian or wetland areas, and linear ROWs would be identified and collocated as much as practicable. These limitations would ensure that any adverse impacts on water resources would not be significant. Some surface disturbing activities (e.g., reconstruction of crossing, road surfacing, gabions) could serve to maintain or improve water quality.

Impacts on water resources from oil and gas development would be similar to those under Alternative 3, with 1,675 acres of anticipated surface disturbance (Table A13-7) and development of 205 wells (Appendix 13). However, the strategy for implementing fluid mineral leasing decisions under this alternative (Appendix 17) could affect the degree of impact in certain areas. There would be no new oil and gas leasing in the majority of Area 3 (Figure A17-1), which could reduce impacts in this area over the long term. However, in the short term, this could result in more rapid exploration and development of existing leases in Area 3 because there would not be any opportunity to renew leases upon expiration. Moreover, given that much of this area is within the high development potential area (Map 69), successful well completion rates are expected to be high. These factors could result in a substantial increase in surface disturbance over a relatively short period of time, potentially increasing short-term impacts on water resources compared with Alternative 3.

Groundwater could be affected during construction of drill pads or by other exploration and development activities. Improper casing and cementing of wells, undetected spills, or leachate from produced water or mud pits could introduce contaminants into the groundwater. Chemicals used for production drilling could cause local contamination of soil and groundwater if not properly managed. Construction of drilling pads, proper disposal practices, proper casing and cementing, and recycling of drilling fluids would be in accordance with BLM guidelines and should minimize adverse effects on groundwater. Hydrological investigations would be conducted before coalbed gas development to determine whether any connection existed between surface waters and the aquifer that would be dewatered. Appropriate measures would be taken to prevent adverse impacts on water quality during dewatering. Dewatering during coalbed gas production could affect the quantity of groundwater by changing flow gradients. Given the present state and federal regulations regarding general water quality, as well as salinity and the Colorado River Basin, surface discharge of produced water is not anticipated. However, accidental surface discharges could adversely impact nearby surface water quality by increasing salinity levels. The extent of any impact would depend on the quality and quantity of the produced water and any fluids being released.

Irrigation diversions on private lands have a noticeable influence on channel dynamics and morphology. Pacific Creek, the primary stream system in the JMH CAP planning area, has been under the influence of irrigation diversions for close to 100 years. Irrigation diversions will most likely continue to be a noticeable influence in the future.

Management actions for special management areas and other management areas could maintain or improve water resources. Restrictions on development and other surface disturbing activities would help maintain or improve water sources and prevent accelerated erosion and sedimentation of surface waters. This beneficial impact would most likely be greater than under the No Action Alternative because of implementation of management actions associated with the expansion of Steamboat Mountain ACEC and management of the West Sand Dunes Archaeological District and Steamboat Mountain Management Area. This would increase the area subject to surface disturbance restrictions and limitations and thus limit potential adverse impacts resulting from exposed soils and subsequent erosion and surface runoff.

4.4.3 Potential Impacts on Wild Horses

BLM is responsible for protecting, managing, and controlling wild horses. The wild horse program is responsible for monitoring both the land and the herds, providing opportunities for public viewing, removing excess animals, and preparing animals for adoption. Impacts on resources and resource users resulting from implementation of wild horse management actions are discussed in those particular resource sections. This section describes potential impacts on wild horses resulting from the implementation of management actions for other resource management categories.

Adverse impacts on wild horses would be considered significant if available forage were insufficient to sustain the AML of the herd or if the AML could not be achieved or maintained.

For analysis purposes, it is assumed that the Divide Basin Wild Horse Herd would continue to be maintained at the AML of 415 to 600 horses over the long term through gathering efforts. It is also assumed that approximately 1 acre would be disturbed, and vegetation and forage removed, through construction and use of wild horse traps every 3 years for gathering.

4.4.3.1 Common to All Alternatives

Impacts on wild horses generally result from activities that affect forage levels, water sources, or allotted acreage within the HMA.

Both wildland fires and prescribed burns could have short-term adverse impacts on wild horses due to loss of forage resources. However, fire has the potential to improve the forage production capacity of a given area and to convert shrub habitat to grasslands. This would provide long-term benefits to wild horses by providing increased levels of preferred forage.

In general, watershed management activities would benefit wild horses by enhancing vegetation resources aimed at reducing erosion and improving water quality. Requiring PFC as the minimum acceptable level of ecological condition for all riparian habitats would maintain and improve the health of both upland and riparian vegetation, which would have the indirect effect of increasing forage levels available for wild horses. Riparian management exclosures could have minor adverse effects by excluding horses from water and forage.

Implementing wild horse management actions would have an overall benefit for wild horses. Achieving and maintaining the AML and implementing monitoring and gathering plans would serve to limit wild horse population numbers and achieve a balance among forage resources, other resource uses, and wild horse management. Establishing viewing sites and providing interpretive information on wild horses would serve to educate the public on the importance of appropriately managing the wild horse program. The impact of gathering activities on wild horses would be addressed during site-specific analyses.

Livestock grazing activities could benefit or adversely affect wild horses because the horses' forage preference overlaps with that of domestic livestock. However, because of the provisions and restrictions of grazing management actions, the overall effect would likely be beneficial. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing would help ensure a healthy rangeland condition, thereby providing adequate forage levels for wild horses. Most range improvements or water developments designed to facilitate livestock management, with the exception of restrictive fencing, would also benefit wild horses and their management.

Vegetation management activities most likely would benefit wild horses and their habitat. Any actions designed to enhance vegetative conditions would indirectly benefit wild horses by enhancing and increasing forage production. Vegetation treatments and manipulation would have adverse, short-term impacts on wild horses through vegetation removal, but long-term benefits would be realized because of enhanced forage production. Preventing and controlling the spread of invasive plant species would also benefit wild horses by reducing competition with native plants, consequently maximizing forage production. Implementation of the Wyoming Standards for Healthy Rangelands would ensure that any impacts would not significantly impact wild horses or their habitat.

Management actions to improve habitat for wildlife, prevent habitat fragmentation, and provide protection from human activity would benefit wild horses by maintaining and improving forage production, reducing human disturbance, and enhancing habitat conditions.

Management of heritage resources generally would be low impact and limited to relatively small areas, and would not be anticipated to have measurable effects on wild horse forage. Even under the most intense management (i.e., excavation), the amount of acreage disturbed would likely be very small. The most likely adverse impact on wild horses would be temporary displacement while human activity occurred at a heritage site. Limitations on surface disturbing activities near heritage sites could benefit wild horses by protecting vegetation resources, which in turn could maintain or enhance forage conditions.

Recreational activities, such as camping and hiking, would not likely have any impact on wild horses. Some adverse impacts could result from the temporary removal of vegetation in concentrated areas used by special recreation groups, but such impacts would be negligible. The use of OHVs in designated areas and on existing roads and trails would not adversely affect wild horses because this activity would not affect any forage base; however, some temporary displacement of horses might occur.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads, and oil and gas development, including construction of well pads, mud pits, and roads, could adversely impact wild horses. Land clearing and grading activities necessary for construction remove vegetation (i.e., result in loss of forage resources) and create disturbance by human activity. Standards for reclamation of linear surface disturbances would be adequate to mitigate any potential adverse impact on wild horses due to vegetation removal. Effects from most mineral development would be temporary, because the vegetative conditions on most sites would ultimately be reclaimed, and displacement from areas experiencing increased human activity related to mineral development is not anticipated to be long term.

The protections afforded to special management areas would generally result in beneficial impacts on wild horses. Protections aimed at conserving sensitive vegetation communities, and limitations on mineral development and other surface disturbing activities, would benefit wild horses by enhancing overall vegetation conditions and consequently increasing forage production. Restrictions on gathering of wild horses in these areas could have minor impacts on the wild horse program. Removing horses from these areas might require that horses be moved a greater distance to access available trap sites.

4.4.3.2 No Action Alternative

Implementing management prescriptions for watershed resources would generally result in beneficial impacts on wild horses. Managing wetlands in accordance with current laws, and limiting surface disturbance within 500 feet of riparian areas and floodplains, would aid in maintaining or improving forage conditions within these areas. Adverse impacts might result from maintaining and developing riparian exclosures, which would reduce the amount of available forage and limit access to water sources.

Wild horse management actions would result in impacts similar to those common to all alternatives. Further benefits could be realized by allowing construction of water developments designed to improve herd distribution and manage forage utilization. Maintaining the current HMA boundaries could adversely impact the management of wild horses. Currently wild horses are using habitat outside the established HMA boundary, and they will continue to do so. Total removal of these horses is not possible because other horses will move into the areas as horses are removed. These “outside area” wild horses do not count toward the AML for the Divide Basin Wild Horse HMA, and the need to remove them will continue.

Impacts on wild horses from livestock grazing activities would be similar to those common to all alternatives. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels and would not result in any additional grazing pressure on available forage. Construction and maintenance of livestock range improvements and water developments would be designed to improve resource conditions and/or enhance livestock distribution. This would maintain healthy forage conditions, prevent overuse of vegetation resources, and ultimately benefit wild horses. Prohibiting placement of salt and mineral supplements within 500 feet of riparian areas would help ensure that water quality remained adequate for consumption by wild horses.

Impacts on wild horses from mineral development and other surface disturbances (e.g., ROWs) would include temporary displacement of wild horses and direct removal of forage. The majority of the Divide Basin Wild Horse HMA is currently open to mining claims, is under lease, or would be open to new oil and gas leases or linear ROWs for pipelines and communication and transmission lines. Construction of mining pits removes forage and habitat for wild horses, and dredging or placer mining affects water sources, all of which could have adverse impacts on the long-term viability of wild horse habitat. Oil and gas development potential within the HMA varies; thus, the amount of available forage that would be removed or disturbed would depend on the level of development that occurred within this area.

4.4.3.3 Alternative 1

Impacts resulting from management of wild horses would be the same as those under the No Action Alternative.

Watershed management actions would be less restrictive under this alternative, which could reduce or increase benefits to wild horses compared with the No Action Alternative. Reducing the avoidance area around riparian zones and floodplains to 250 feet would provide less protection to vegetation resources from surface disturbing activities and possibly result in degraded forage conditions. Removing riparian exclosures could benefit wild horses by increasing the amount of available forage in the short term.

Adverse impacts on wild horses resulting from livestock grazing management actions would increase compared with the No Action Alternative. The anticipated use of livestock AUMs would increase over the planning period to the permitted active use amount, which is approximately double the historic use. This would increase pressure on forage and water resources within allotments that were not currently using their fully permitted AUMs, thereby reducing the quantity and quality of forage available to wild horses. Moreover, less restrictive measures for range improvements, water developments, and salt placement could limit protections to forage and surface water resources. The level of significance of the adverse impacts on wild horses would depend on the overall condition of the range within the HMA and the actual increase in AUM usage. The implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing would help minimize adverse impacts on forage and water resources.

Benefits from wildlife management would be less extensive than under the other alternatives because of less restrictive actions to protect wildlife habitat.

This alternative would provide the greatest opportunity for mineral development, which would increase the potential for impacts related to forage removal. The majority of the Divide Basin Wild Horse HMA would be open to mining claims, under lease, or open to new leases for oil and gas or linear ROWs. Development potential within the HMA varies; thus, the amount of available forage that would be removed or disturbed would depend on the level of development that occurred within this area. The level of development would likely be greater under this alternative because of fewer limitations imposed on developers; thus, an adverse impact on wild horses could result if development outpaced reclamation and replacement of habitat. This could also have indirect adverse impacts if wild horses were displaced elsewhere for long periods of time.

4.4.3.4 Alternative 2

This alternative would reestablish the boundaries of the Divide Basin Wild Horse HMA to exclude the JMH CAP planning area. A gathering plan would be developed and implemented to remove wild horses from the planning area and maintain the AML within the reestablished boundaries of the HMA outside the planning area. Until reestablishment of the HMA boundaries and gathering of excess wild horses occurred, management actions associated with other land and water resources would generally have beneficial impacts on wild horses because of increased protection of forage and water resources. The potential could exist for adverse cumulative impacts in the reestablished HMA outside the planning area if the concentration of wild horses in a smaller area caused overuse of available forage and water resources.

Wild horses currently exist in favorable habitats outside the existing HMA boundary. The only way to ensure that the horses would not stray from the reestablished HMA would be to create a barrier to their movement. This would require the construction of more than 30 miles of fence, which could impact the wild and free roaming nature of the herd.

4.4.3.5 Alternative 3

Impacts resulting from management of livestock would be the same as those under the No Action Alternative.

This alternative would expand the Divide Basin Wild Horse HMA to include the entire JMH CAP planning area. This would have an overall beneficial impact by improving wild horse management and providing additional habitat for wild horses. The horses currently outside the HMA would be counted against the AML for the HMA, which at present is not the case. These “outside area” horses would gain legal status and would no longer be considered outside-HMA animals. Replacement of removed horses by other animals would not re-create the outside-HMA situation. No barrier would need to be constructed to limit wild horse use to the present HMA boundary (No Action, Alternative 1) or a reduced HMA boundary (Alternative 2). Increased flexibility in where to remove horses within a much larger area would allow for more responsiveness to site-specific needs. For example, more horses could be removed from the areas within the existing HMA boundary because the horses in the expansion area would count toward the AML.

Management actions to improve habitat for wildlife, prevent habitat fragmentation, and provide protection from human activity would benefit wild horses by maintaining and improving forage production and habitat conditions. These beneficial impacts could be slightly greater than under the No Action Alternative because of expanded protection measures for greater sage-grouse. Increasing the amount of sage-grouse winter habitat would reduce surface disturbing and disruptive activities within this area, thereby reducing related forage removal and horse displacement.

Impacts on wild horses from mineral development and other surface disturbances (e.g., ROWs) would include temporary displacement of wild horses and direct removal of forage. The majority of the Divide Basin Wild Horse HMA would be open to mining claims, under lease, or open to new oil and gas leases or linear ROWs for pipelines and communication and transmission lines. Construction of mining pits removes forage and habitat for wild horses, and dredging or placer mining affects water sources, all of which could have adverse impacts on the long-term viability of wild horse habitat. Oil and gas development potential within the HMA varies; thus, the amount of available forage that would be removed or disturbed would depend on the level of development within this area. Impacts would be similar to, but slightly less than, under the No Action Alternative, with 1,675 acres of anticipated surface disturbance (Table A13-7) and development of 205 oil and gas wells (Appendix 13).

Any actions that limited the extent of surface disturbing activities would help minimize adverse impacts on available forage and water sources, having a beneficial impact on wild horses. Under this alternative, a greater amount of land area would be subject to controlled surface use requirements or ROW exclusion, withdrawn from mineral location, or managed under a transportation plan. Surface disturbing activities would be controlled within 500 feet to one-quarter mile of riparian areas, wetlands, and 100-year floodplains, but parameters could vary on a case-by-case basis.

Management actions related to special management areas under this alternative could result in slightly greater beneficial impacts on wild horses than under the No Action Alternative. Implementation of management actions associated with the expansion of existing ACECs would increase the area subject to surface disturbance restrictions and limitations and thus protect available forage and water sources.

4.4.3.6 Proposed JMH CAP

Both wildland fires and prescribed burns could have short-term adverse impacts on wild horses due to loss of forage resources. However, fire has the potential to improve the forage production capacity of a given area and to convert shrub habitat to grasslands. This would provide long-term benefits to wild horses by providing increased levels of preferred forage.

In general, watershed management activities would benefit wild horses through enhancement of vegetation resources aimed at reducing erosion and improving water quality. Requiring PFC as the minimum acceptable level of ecological condition for all riparian habitats would maintain and improve the health of both upland and riparian vegetation, which would have the indirect effect of increasing forage levels available for wild horses. Managing wetlands in accordance with current laws, and limiting surface disturbance within 500 feet of riparian areas and floodplains, would further aid in maintaining or improving forage conditions within these areas. Riparian management exclosures could have short-term adverse effects by excluding horses from water and forage. Over the long term, such exclosures would benefit wild horses by improving water quality and riparian forage conditions. However, the provision under this alternative that allows exclosures to be removed could partially offset these impacts.

Implementing wild horse management actions would have an overall benefit for wild horses. Maintaining the AML and implementing monitoring and gathering plans would serve to limit wild horse population numbers and achieve a balance among forage resources, other resource uses, and wild horse management. The impact of gathering activities on wild horses would be addressed during site-specific analyses. Establishing viewing sites and providing interpretive information on wild horses would serve to educate the public on the importance of appropriately managing the wild horse program. However, maintaining the current HMA boundaries as specified under this alternative could adversely impact the management of wild horses. Currently wild horses are using habitat outside the established HMA boundary, and they will continue to do so. Total removal of these horses is not possible because other horses will move into these areas as horses are removed. These "outside area" wild horses will not count toward the AML for the Divide Basin Wild Horse HMA, and the need to completely remove them will continue.

Livestock grazing activities could benefit or adversely affect wild horses because the horses' forage preference overlaps with that of domestic livestock. However, because of the requirements and restrictions associated with grazing management actions, overall effects would likely be beneficial. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing would help ensure a healthy rangeland condition, thereby providing adequate forage levels for wild horses. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels and would not result in any additional grazing pressure on available forage. The construction and maintenance of livestock range improvements and water developments would be designed to improve resource conditions and/or enhance livestock distribution. This would maintain healthy forage conditions, prevent overuse of vegetation resources, and ultimately benefit wild horses. Within sensitive wildlife habitat, livestock water developments would be allowed only if resource conditions were improved. This could further benefit wild horse habitat through improved construction planning of such developments. Prohibiting placement of salt and mineral supplements within 500 feet of riparian areas would help ensure that water quality remained adequate for consumption by wild horses.

Vegetation management activities would most likely benefit wild horses and their habitat. Any actions designed to enhance vegetative conditions would indirectly benefit wild horses by enhancing and increasing forage production. Vegetation treatments and manipulation would cause adverse short-term impacts on wild horses through vegetation removal, but long-term benefits would be realized because of enhanced forage production. Preventing and controlling the spread of invasive plant species would also benefit wild horses by reducing competition with native plants, consequently maximizing forage production. Implementation of the Wyoming Standards for Healthy Rangelands would ensure that any impacts did not significantly impact wild horses or their habitat.

Management actions to improve habitat for wildlife, prevent habitat fragmentation, and provide protection from human activity would benefit wild horses by maintaining and improving forage production, reducing human disturbance, and enhancing habitat conditions. These beneficial impacts could be greater than under the No Action Alternative because of expanded protection measures for greater sage-grouse. Placing a controlled surface use stipulation on sage-grouse nesting habitat and increasing the amount of sage-grouse winter habitat subject to seasonal limitations would reduce the level of surface disturbing activities occurring in these areas, thereby reducing related forage removal and wild horse displacement. Recreational activities such as camping and hiking would not likely have any impact on wild horses. Some adverse impacts could result from the temporary removal of vegetation in concentrated areas used by special recreation groups, but such impacts would be negligible. The use of OHVs in designated areas and on existing roads and trails would not adversely impact wild horses because this activity would not affect the overall forage base; however, some temporary displacement could occur.

The management of heritage resources generally would be low impact and limited to relatively small areas, and would not be anticipated to have measurable effects on wild horse forage. Even under the most intense management (i.e., excavation), the amount of acreage disturbed would likely be very small. The most likely adverse impact on wild horses would be temporary displacement while human activity occurred at the heritage site. Limitations on surface disturbing activities near heritage sites could benefit wild horses by protecting vegetation resources, which in turn could maintain or enhance forage conditions. Impacts on vegetation resources near the paleosol deposition area would most likely be less extensive than those under the No Action Alternative because of designation of this area as an archeological district. This designation would increase protections from surface disturbing activities, thereby reducing adverse impacts on forage resources.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads, and oil and gas development, including construction of well pads, mud pits, and roads, could adversely impact wild horses. Land clearing and grading activities necessary for construction remove vegetation, resulting in loss of forage resources, and create disturbance by human activity. Standards for reclamation of linear surface disturbances would mitigate potential adverse impacts on wild horses due to vegetation removal. Effects from most mineral development would be temporary because the vegetative conditions of most sites ultimately would be reclaimed, and displacement from areas experiencing increased human activity related to mineral development is not anticipated to be long term. Construction of mining pits removes forage and habitat for wild horses, and dredging or placer mining affects water sources, all of which could have adverse impacts on the long-term viability of wild horse habitat.

Oil and gas development potential within the HMA varies; thus, the amount of available forage that would be removed or disturbed would depend on the level of development within this area. Impacts on wild horses would likely be similar to those under Alternative 3, with development of 205 wells (Appendix 13). However, the strategy for implementing fluid mineral leasing decisions under this alternative (Appendix 17) could affect the degree of impact in certain areas. There would be no new oil and gas leasing in the majority of Area 3 (Figure A17-1), which could reduce impacts in this area over the long term. However, in the short term, this could result in more rapid exploration and development of existing leases in Area 3 because there would not be any opportunity to renew leases upon expiration. Moreover, given that much of this area is within the high development potential area (Map 69), successful well completion rates are expected to be high. These factors could result in the removal of a substantial amount of forage over a relatively short period of time, potentially increasing short-term impacts on wild horses compared with Alternative 3.

Management actions for special management areas and other management areas would generally result in beneficial impacts on wild horses. Protections aimed at conserving sensitive vegetation communities and limitations on mineral development and other surface disturbing activities would benefit wild horses by enhancing overall vegetation conditions and consequently increasing forage production. Restrictions on gathering of wild horses in these areas could have minor impacts on the wild horse program. Removing horses from these areas might require that horses be moved a greater distance to access available trap sites. These impacts would be greater than under the No Action Alternative because of implementation of management actions associated with the expansion of Steamboat Mountain ACEC and management of the West Sand Dunes Archaeological District and Steamboat Mountain Management Area.

4.4.4 Potential Impacts on Livestock Grazing

BLM identifies lands available for livestock grazing, implements grazing management practices, and authorizes permitted use for maintaining ecological balance and multiple use relationships. Livestock grazing is not a natural, physical, or biological resource but is a user of those resources. Impacts on resources and resource users resulting from implementation of the livestock grazing management actions are discussed in those particular resource sections. This section describes potential impacts on livestock grazing operations resulting from the implementation of management actions for other resource management categories. Implementing resource management actions would have environmental impacts on livestock grazing activities and indirect, nonenvironmental impacts on livestock operators.

Impacts on livestock grazing would be considered significant if resource management actions caused a reduction in forage levels that would require livestock operators to reduce their permitted AUMs.

For analysis purposes, it is assumed that livestock grazing would occur throughout the entire JMH CAP planning area. It is also assumed that anticipated grazing use would increase over the planning period to the fully permitted active use amount (26,830 AUMs) under Alternative 1 but maintain the historic use (11,569 AUMs) under all other alternatives. Although some areas are more suitable for different classes of livestock, the impacts are assumed to be similar for all areas and therefore are not discussed separately. The rate of revegetation of disturbed areas would vary by type of activity. Construction of fences, pipelines, water wells, troughs, and reservoirs would cause a loss of some soil and vegetation. Vegetation would be reestablished along fences and pipelines within 3 to 5 years, whereas water wells, troughs, and reservoirs would remain disturbed during their useful life and would be revegetated upon abandonment.

Except under Alternative 2, approximately 23 livestock water developments (e.g., pits, ponds, and water wells) would be constructed or rebuilt in the JMH CAP planning area over the 20-year planning period, disturbing approximately 23 acres. Under Alternative 2, only 11 livestock water developments would be constructed or rebuilt in the JMH CAP planning area over the 20-year planning period, disturbing approximately 11 acres. Prescribed burns and wildfires would cause a loss of vegetation for a period of 1 to 2 years and a change in vegetation for 15 to 30 years.

4.4.4.1 Common to All Alternatives

Impacts on livestock grazing activities are generally the result of activities that affect forage levels or allowable AUMs for individual grazing allotments. Grazing management practices and permitted use must achieve the desired outcomes outlined in the Wyoming Standards for Healthy Rangelands.

Both wildland and prescribed fires would have short-term impacts on livestock grazing due to loss of forage resources. However, over the long term, fire has the potential to improve forage production capacity and convert shrub habitat to grasslands. This would benefit livestock by providing increased levels of preferred forage. The requirement to rest a burn area to allow new vegetation to establish could have a short-term impact on livestock operators because the amount of available forage would be reduced for the localized area of the burn. The level of significance of this impact would depend on the extent of the burn area and the season of use.

Watershed management would enhance vegetation resources by reducing erosion and improving water quality. Requiring PFC as the minimum acceptable level of ecological condition for riparian areas would maintain and improve the health of riparian vegetation, which would have the indirect effect of increasing forage levels for livestock. However, short-term adverse impacts on operators could result from construction of riparian exclosures or the need to remove livestock from allotments and/or pastures to achieve healthy rangeland standards.

Implementation of livestock grazing management actions could have both beneficial and adverse impacts on livestock operators. Most impacts would result from the need to make grazing adjustments for the purposes of complying with the Wyoming Standards for Healthy Rangelands. Such adjustments could include modified turnout dates, shorter grazing periods, growing season rest, riparian exclosures, forage utilization levels, and livestock conversions. Although these adjustments would benefit long-term forage production and subsequently livestock growth rates, adverse impacts on livestock operators could occur in the short term. The extent of any impact on livestock grazing operations would depend on the flexibility of the individual operator to implement and respond to these adjustments.

Livestock water developments would provide additional watering sites, thereby improving livestock distribution and reducing competition with other grazing animals. Restrictions on salt and mineral placement could require additional planning and effort but would distribute forage use and reduce impacts on other resources, including water sources. Livestock grazing management would benefit from enhanced distribution of livestock and the maintenance or improvement of vegetation. This would increase available forage and help achieve the Wyoming Standards for Healthy Rangelands.

Vegetation management activities would most likely result in beneficial impacts on livestock grazing management. Any actions designed to enhance vegetative conditions would indirectly benefit livestock by enhancing and increasing forage production. Vegetation treatments and manipulation could have short-term effects on livestock grazing through vegetation removal, but long-term benefits would be realized through enhanced forage production. Preventing and controlling the spread of invasive plant species would also benefit livestock by reducing competition with native plants, and consequently maintaining or improving forage production.

Activities associated with wildlife habitat management would generally benefit livestock grazing operations through habitat enhancement measures that consequently improve forage production. However, adverse effects could also result because of the inherent competition between big game species and livestock for forage resources. Because of dietary preference, this competition is more pronounced with elk than with antelope or mule deer. Similar to livestock, elk are considered grazers that prefer grasses, whereas the preference for mule deer and antelope is to browse shrub species. Large concentrations of these big game animals occur within portions of the planning area (Map 51), which could require some livestock operators to alter grazing management practices to comply with the Wyoming Standards for Healthy Rangelands. Uneven distribution of big game causes some grazing allotments to receive a disproportionate amount of the total wildlife grazing within the planning area, thereby putting additional strain on the forage resources within those allotments. This is especially true for allotments located either entirely or partially within the south-central portion of the planning area, including the core area, which is birthing and wintering habitat for a majority of the big game populations that inhabit the planning area. Although the population objective for elk would vary between the No Action Alternative (500) and the action alternatives (1,200), impacts on allotments located within the south-central portion of the planning area would remain approximately the same among the alternatives regardless of the changes in the population objective because of the expectation that the elk population size in this area would not change considerably. Achieving wildlife population objectives and implementing the various management options available to livestock operators would help minimize effects. Further effects could occur if management actions resulted in increased wildlife populations, which could reduce available forage for livestock. It is unlikely that this would occur, because of Wyoming Game and Fish Department (WGFD) efforts to maintain objectives.

The management of heritage sites would generally be limited to relatively small areas. Even under the most intense management (i.e., excavation), the amount of acreage disturbed would be very small. These activities are not anticipated to have measurable impacts on livestock forage resources. Impacts could occur if heritage sites were fenced from livestock use, causing a loss of available forage. However, given the size of most heritage sites, this impact would be minimal. Other impacts could occur because of restrictions on surface disturbing activities near heritage sites, which might preclude the construction of range improvements designed to facilitate livestock grazing. Conversely, such restrictions would provide protection to vegetation resources, which in turn could maintain or enhance forage conditions.

Recreational activities would likely not impact livestock grazing activities, except by limited human disturbance. Some impacts could result from the temporary removal of vegetation by campers in concentrated areas, but any impact would be negligible. The use of OHVs would not impact livestock if this recreational activity stayed within authorized areas. However, unauthorized OHV activity could affect livestock grazing by damaging vegetation resources and consequently reducing available forage.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads, and mineral development, including construction of well pads, pits, and roads, could impact livestock grazing. Land clearing and grading activities necessary for construction remove vegetation, resulting in loss of forage resources. Standards for reclamation of linear surface disturbances would be adequate to mitigate adverse impacts related to short-term vegetation removal. Effects from most mineral development would be short-term because the vegetation conditions on most sites would ultimately be reclaimed. Salable mineral activity would not be expected to have measurable effects on livestock grazing management because of the limited activity anticipated and the limited area of vegetation removal. Any mineral withdrawals would prevent vegetation removal and the potential subsequent decrease in the forage base.

Management actions for special management areas could have both beneficial and adverse impacts on livestock grazing activities. Restrictions on mineral development and other surface disturbing activities would help prevent the removal of forage resources but could also preclude the construction of range improvements designed to facilitate livestock grazing. In addition, protections aimed at conserving sensitive vegetation communities would affect livestock grazing by enhancing overall vegetation conditions and consequently increasing forage production.

4.4.4.2 No Action Alternative

Effects from fire management activities on livestock grazing would be similar to the impacts common to all alternatives. Implementing full fire suppression for basin big sagebrush/lemon scurfpea vegetation associations under this alternative could result in short-term impacts on livestock grazing through vegetation removal and loss of plant diversity. This vegetation association stabilizes the sandy soils in which it grows and provides habitat and forage, primarily for wildlife. Because of the relatively limited extent of these vegetation associations, impacts on livestock grazing would not be significant.

Effects from watershed management actions would be similar to the impacts common to all alternatives. Surface disturbance would be limited within 500 feet of riparian areas and other water resources, conserving forage resources within these areas. However, this could preclude the construction of water developments and range improvements in these areas (unless any impacts on water quality could be mitigated). Riparian exclosures could also affect grazing activities by reducing the amount of available forage for livestock because the exclosures would remain closed to grazing. The extent of this effect on livestock operators would depend on the number, location, and size of exclosures at any given time.

Wild horse management activities could affect livestock grazing through competition for forage resources. However, maintaining the AML for horses, implementing monitoring and gathering plans, and allowing for water developments would all serve to limit and distribute wild horses, consequently minimizing effects on livestock grazing.

Management actions for livestock grazing would directly affect grazing operations. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels under this alternative and would not result in any additional grazing pressure on available forage. Requiring that livestock range improvements and water developments improve resource conditions and/or enhance livestock distribution could necessitate additional planning in constructing such developments but would improve long-term forage production and prevent overuse of vegetation resources. Similarly, more planning and effort might be required of livestock operators to comply with the requirements for placement of salt and mineral supplements (prohibited within 500 feet of riparian habitat, historic trails, and special status species habitat), but long-term benefits would be realized by improving livestock distribution and maintaining the Wyoming Standards for Healthy Rangelands.

Wildlife management effects on livestock grazing would be similar to the impacts common to all alternatives. Competition between big game and livestock for forage resources would be the least intense under this alternative because the population objective for elk would remain at the current level of 500, which could result in slightly less adverse impacts compared with the other alternatives.

Approximately 9,346 AUMs within the JMH CAP planning area (see Table 4-11 at the end of Chapter 4) would be necessary to support the WGFD herd unit population objectives for elk (500), mule deer (4,000), antelope (6,000), and wild horses (415–600). Estimates of AUMs were based on animal unit equivalents (AUE) specified in the Draft Environmental Impact Statement for the Proposed Grazing Management Program for the Salt Wells-Pilot Butte Area, 1983. This use, combined with the anticipated use of 11,569 AUMs for livestock, could degrade forage resources on some allotments and thus jeopardize compliance with the Wyoming Standards for Healthy Rangelands. This could result in the need to make grazing adjustments and to implement appropriate actions to comply with the standards.

Impacts from mineral exploration and development and from other surface disturbances in support of these activities (e.g., ROWs) would include removal of vegetation and consequently a reduction in available forage for livestock. It is assumed that the amount of mineral development that could occur during the planning period would be related to the amount of acreage available for such development. Therefore, reducing available acreage (i.e., closing areas to, or withdrawing areas from, mineral development) would serve to diminish development activity and consequently reduce impacts on livestock grazing. The amount of surface disturbance associated with mineral development would be approximately 200 acres in the most active year and approximately 1,800 acres over the planning period (Appendix 13, Table A13-7), which would represent an insignificant impact on livestock grazing when compared to the size of the planning area. Standards for reclamation of linear surface disturbances would help mitigate impacts related to vegetation removal.

4.4.4.3 Alternative 1

Impacts on livestock grazing from the fire management program and wild horses would be the same as those under the No Action Alternative.

Watershed management actions would be less restrictive under this alternative, which could create short-term benefits for and long-term adverse impacts on livestock grazing activities. Reducing the avoidance area around riparian areas and floodplains to 250 feet would provide less protection to forage resources from surface disturbing activities but would allow for greater flexibility in constructing water developments and range improvements. Allowing the removal of riparian exclosures under this alternative would increase available forage for livestock but would eliminate related benefits to riparian vegetation.

Livestock grazing management actions under this alternative would generally benefit operators by allowing increased flexibility in managing livestock. Less restrictive measures for range improvements, water developments, and salt and mineral placement could create short-term benefits for livestock operators but would limit protections to forage and surface water resources. The anticipated use of livestock AUMs would increase over the planning period to the permitted active use amount, further increasing grazing pressure on forage and water resources. Increased grazing and reduced resource protections could result in significant impacts on livestock grazing activities if operators were required to reduce their AUMs to comply with the Wyoming Standards for Healthy Rangelands.

Beneficial impacts resulting from wildlife management actions might not be as extensive as under the other alternatives because actions to improve wildlife habitat (which would also benefit livestock grazing) would be less restrictive. Animal damage control activities under this alternative could directly benefit livestock. The control methods would be coordinated with BLM.

Competition between big game and livestock for forage resources would be the most intense under this alternative, primarily because the anticipated use of livestock AUMs would increase over the planning period to the fully permitted active use amount. In addition, the elk population objective would be increased to 1,200, which could slightly increase the competition between livestock and wildlife for forage resources. An additional 1,513 AUMs would be required to support the augmented elk population objective, which is insignificant when compared to the available forage of the total planning area. Allotments located within the south-central portion of the planning area, including the core area, would be disproportionately impacted because of the larger populations of big game that inhabit this area (Map 51).

Approximately 10,860 AUMs within the JMH CAP planning area (see Table 4-11 at the end of Chapter 4) would be necessary to support the WGFD herd unit population objectives for elk (1,200), mule deer (4,000), antelope (6,000), and wild horses (415–600). Estimates of AUMs were based on AUEs specified in the Draft Environmental Impact Statement for the Proposed Grazing Management Program for the Salt Wells-Pilot Butte Area, 1983. Utilizing the 26,830 AUMs permitted for livestock, coupled with wildlife use levels, could degrade forage resources on some allotments and thus jeopardize compliance with the Wyoming Standards for Healthy Rangelands. This could result in significant impacts on some operators if they were required to reduce their AUMs. Implementing appropriate actions for livestock grazing management might be necessary. Such actions could include, but would not be limited to, reduction of permitted AUMs, modified turnout dates, construction of livestock water developments and range improvements, shorter grazing periods, growing season rest, development of riparian pastures and exclosures, implementation of forage utilization levels, and livestock conversions. For some allotments, reallocation of AUMs among livestock, wildlife, and wild horses could be required to ensure that adequate forage would be available for big game. This would likely result in a reduction of AUMs for livestock but would not be implemented unless it were the only appropriate action for complying with the Wyoming Standards for Healthy Rangelands.

This alternative provides the greatest opportunity for mineral development and production, which would result in greater losses of forage resources. The land area available for lease and mining claims would be most extensive under this alternative; thus, the potential for mineral development would likely increase. This could result in greater surface disturbance, which could affect livestock grazing by removing available forage. The amount of surface disturbance associated with mineral development would be approximately 220 acres in the most active year and approximately 2,100 acres over the planning period (Appendix 13, Table A13-7), which would represent an insignificant impact on livestock grazing when compared to the size of the planning area. Reclamation of linear surface disturbances would help mitigate adverse impacts related to vegetation removal. Effects from most mineral development would be temporary because the vegetation conditions on most sites would ultimately be reclaimed. However, an adverse impact on grazing could result if development outpaced reclamation and replacement of forage.

Management activities related to special management areas could reduce both beneficial and adverse effects on livestock grazing by eliminating management actions associated with the removal of the ACEC designation from Steamboat Mountain ACEC and the reduction of the South Pass Historic Landscape viewshed. This would reduce the area subject to surface disturbance restrictions and limitations, which could reduce protections to forage resources but provide greater flexibility in constructing range improvements within these areas.

4.4.4.4 Alternative 2

Fire management actions would have effects on livestock grazing similar to those under the No Action Alternative. Limited fire suppression for basin big sagebrush/lemon scurfpea vegetation associations would be applied, but any effect on grazing would not be significant.

Watershed management actions would be the most restrictive under this alternative. This would benefit forage conditions but could affect some grazing management activities. Although increasing buffers to one-quarter mile around riparian areas and increasing the area designated as avoidance or NSO would help prevent destruction of vegetation resources, it would also preclude construction of water developments and range improvements designed to facilitate livestock grazing operations. Riparian exclosures would also impact grazing activities by reducing the amount of available forage for livestock because the exclosures would be closed to grazing. The extent of this impact on livestock operators would depend on the number, location, and size of exclosures at any given time during the planning period.

This alternative would reestablish the boundaries of the Divide Basin Wild Horse HMA to exclude the JMH CAP planning area. A gathering plan would be developed and implemented to remove wild horses from the planning area and to maintain the AML within the reestablished boundaries of the HMA outside the planning area. This would likely affect livestock grazing by reducing competition with wild horses for forage and water resources. Certain allotments would be subdivided by construction of a fence designed to limit wild horse movement to the reestablished HMA boundary. Adverse impacts could occur from limiting livestock use within allotments affected by wild horse fence construction.

The increased restrictions on livestock grazing activities under this alternative would likely have greater adverse effects on livestock operators than would occur under the other alternatives. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels. Requiring that modified turnout dates be the primary method of complying with the Wyoming Standards for Healthy Rangelands could increase costs for livestock operators who would be forced to find alternate pastures or feeding areas for their livestock. Increasing the buffer area for salt and mineral placement to one-half mile from riparian areas, historic trails, and special status plant species would require more planning and effort on the part of livestock operators and could increase related costs. Whether the minimum one-half-mile distance would provide greater protection to these areas than would some shorter distance would depend on the topography, drainage patterns, and vegetative cover at a particular location. Restrictions on water developments and range improvements in sensitive wildlife habitats might preclude their construction in some cases, thereby reducing the extent of forage and water accessible by livestock.

Management actions for wildlife under this alternative would likely have greater beneficial effects on livestock grazing due to expanded protection and enhancement measures for wildlife resources that would limit surface disturbance and human disruption and improve forage conditions. However, these actions could also increase wildlife populations, potentially reducing available forage for livestock. Such impacts would occur only if WGFD efforts to maintain wildlife population objectives were not successful. Adverse impacts could be slightly greater than under the No Action Alternative because the elk population objective would be increased to 1,200. This would require an increase of 1,513 AUMs for elk, which is insignificant when compared to the available forage of the total planning area. Animal damage control for livestock protection would be by nonlethal methods, with lethal methods used only if they would benefit wildlife in addition to livestock. This could affect livestock operations if removing animals known to have killed livestock proved to be not as efficient as the methods employed under other alternatives.

Approximately 8,742 AUMs within the JMH CAP planning area (see Table 4-11 at the end of Chapter 4) would be necessary to support the WGFD herd unit population objectives for elk (1,200), mule deer (4,000), and antelope (6,000). Estimates of AUMs were based on AUEs specified in the Draft Environmental Impact Statement for the Proposed Grazing Management Program for the Salt Wells-Pilot Butte Area, 1983. This use, combined with the anticipated use of 11,569 AUMs for livestock, could degrade forage resources on some allotments and thus jeopardize compliance with the "Wyoming Standards for Healthy Rangelands." This could result in the need to make grazing adjustments and implement appropriate actions to comply with the standards.

Increased protection would be afforded to heritage resources under this alternative, which could have both greater beneficial and adverse impacts on livestock grazing than would occur under the other alternatives. Areas within 300 feet of sites eligible for inclusion in the NRHP would be protected from surface disturbing activities, which could help protect forage resources. However, this limitation could also further restrict the construction of range improvements and water developments within the same area.

Management prescriptions for recreational activities under this alternative would likely reduce related impacts. Camping would be allowed only in designated areas, and parties of five or more would require a group camping permit. This would help in monitoring concentration of use, limit camping along streams, and reduce compaction of vegetation and soils. The amount of area closed to OHV use or subject to OHV use restrictions would increase, thereby reducing the potential for damage to forage resources. Withdrawing the planning area from recreational mining use would eliminate related surface disturbance and forage losses. However, it is not anticipated that this activity would disturb a significant area of available forage.

This alternative provides the least opportunity for mineral exploration and development, which would minimize related losses of forage resources. The amount of surface disturbance associated with mineral development would be approximately 170 acres in the most active year and approximately 1,300 acres over the planning period (Appendix 13, Table A13-7), which would represent an insignificant impact on livestock grazing when compared to the size of the planning area. Effects from most mineral development would be temporary because the vegetation conditions on most sites would ultimately be reclaimed. However, an effect on grazing could result if development outpaced reclamation and replacement of forage.

Impacts on livestock grazing by actions related to special management areas would be greater under this alternative than under other alternatives. Management actions associated with expansion of existing ACECs and historic viewsheds and designation of new ACECs and research natural areas would increase the amount of area subject to surface disturbance restrictions and limitations and thereby increase protections to forage resources. However, such expansions and designations would also further limit construction of water developments and range improvements, potentially affecting livestock operations.

4.4.4.5 Alternative 3

Impacts on livestock grazing from the fire management program would be the same as those under the No Action Alternative.

Watershed management actions under this alternative would have effects on livestock grazing similar to those under the No Action Alternative. Surface disturbance would be limited within 500 feet to one-quarter mile of riparian areas and other water resources, which could adversely impact livestock grazing management by precluding the construction of water developments and range improvements in these areas. However, this limitation could also conserve forage resources within these areas. Riparian exclosures could also impact grazing activities by reducing the amount of available forage for livestock because the exclosures would be closed to grazing.

This alternative would expand the boundaries of the Divide Basin Wild Horse HMA to include the entire JMH CAP planning area and would serve to better distribute wild horses, possibly reducing the competition between livestock and wild horses for forage resources. Because wild horses currently inhabit areas outside the HMA boundaries, the likelihood of reduced effects would not be realized in the short term until herd levels reached and maintained the AML.

Livestock grazing management actions under this alternative would affect livestock operators in ways similar to those under the No Action Alternative. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels and would not result in any additional grazing pressure on available forage. Construction and maintenance of livestock range improvements and water developments would be designed to improve resource conditions and/or enhance livestock distribution. This would maintain healthy forage conditions and prevent overuse of vegetation resources. Prohibiting salt and mineral supplements within one-quarter mile of riparian areas, historic trails, and special status plant species would improve livestock distribution and help maintain water quality. The effectiveness of the increased distance would depend on the size and type of the activity and the topography and drainage patterns of the activity location.

Under this alternative, management actions for wildlife would have impacts on livestock grazing similar to those of Alternative 2 but not as extensive. Expanded protection and enhancement measures for wildlife resources would limit surface disturbance and improve forage conditions but could also increase wildlife populations, thereby potentially reducing available forage for livestock. WGFD efforts to maintain wildlife population objectives should prevent this effect. Overall adverse impacts on livestock grazing could be slightly greater than under the No Action Alternative because the elk population objective would be increased to 1,200. This would require an increase of 1,513 AUMs for elk, which is insignificant when compared to the available forage of the total planning area. Lethal methods would be allowed for animal damage control for both livestock and wildlife protection. This could directly benefit livestock operations by removing animals known to have killed livestock.

Approximately 10,860 AUMs within the JMH CAP planning area (see Table 4-11 at the end of Chapter 4) would be necessary to support the WGFD herd unit population objectives for elk (1,200), mule deer (4,000), antelope (6,000), and wild horses (415–600). Estimates of AUMs were based on AUEs specified in the Draft Environmental Impact Statement for the Proposed Grazing Management Program for the Salt Wells-Pilot Butte Area, 1983. This use, combined with the anticipated use of 11,569 AUMs for livestock, could degrade forage resources on some allotments and thus jeopardize compliance with the Wyoming Standards for Healthy Rangelands. This could result in the need to make grazing adjustments and implement appropriate actions to comply with the standards.

Recreation management actions under this alternative would affect livestock grazing in ways similar to those under Alternative 2. Camping would be allowed only in designated areas, and parties of 10 or more would require a group camping permit. This would help in monitoring concentration of use, limit camping along streams, and reduce compaction of vegetation and soils. Closing some areas OHV use or restricting OHV use to designated areas would reduce the potential for damage to forage resources. The planning area would be withdrawn from recreational mining use except for a 5-acre site that would be designated and managed for recreational mining; thus, surface disturbance or loss of forage from this type of activity would be negligible.

Impacts from mineral exploration and development, and from other surface disturbances in support of these activities (e.g., ROWs), would be similar to those discussed under the No Action Alternative. The amount of surface disturbance associated with mineral development under this alternative would be approximately 190 acres in the most active year and approximately 1,600 acres over the planning period (Appendix 13, Table A13-7), which would represent an insignificant impact on livestock grazing when compared to the size of the planning area. Standards for reclamation of linear surface disturbances would help mitigate impacts on livestock grazing related to vegetation removal. Effects from most mineral development would be temporary because the vegetation conditions on most sites would ultimately be reclaimed. Effects on grazing could result if development outpaced reclamation and replacement of forage.

Effects related to management actions associated with special management areas would be similar to those under Alternative 2 but not as extensive. Management actions associated with fewer expansions and designations of special management areas under this alternative would result in fewer actions limiting and restricting surface disturbing activities.

4.4.4.6 Proposed JMH CAP

Both wildland and prescribed fires would have short-term impacts on livestock grazing due to a loss of forage resources. However, over the long term, fire has the potential to improve forage production capacity and to convert shrub habitat to grasslands. This would benefit livestock by providing increased levels of preferred forage. The requirement to rest a burn area to allow new vegetation to establish could have a short-term impact on livestock grazing because the amount of available forage would be reduced for the localized area of the burn. The level of significance of this effect would depend on the extent of the burn area and the season of use. Full fire suppression for basin big sagebrush/lemon scurfpea vegetation associations could also result in short-term impacts on livestock grazing through vegetation removal and loss of plant diversity. This vegetation association stabilizes the sandy soils in which it grows and provides habitat and forage primarily for wildlife. Because of the relatively limited extent of these vegetation associations, impacts on livestock grazing would not be significant.

Watershed management would enhance vegetation resources by reducing erosion and improving water quality. Requiring PFC as the minimum acceptable level of ecological condition for riparian areas would maintain and improve the health of riparian vegetation, which would have the indirect effect of increasing forage levels for livestock. Surface disturbance would be limited within 500 feet of riparian areas and other water resources, thereby conserving forage resources within these areas. However, this could also preclude the construction of water developments and range improvements in these areas unless any impacts on water quality could be mitigated. Riparian exclosures could also adversely affect grazing activities by reducing the amount of available forage for livestock because the exclosures would be closed to grazing. However, the provision under this alternative that allows exclosures to be removed could partially offset these effects. The extent of this effect on livestock operators would depend on the number, location, and size of exclosures at any given time during the planning period.

Wild horse management activities could result in effects on livestock grazing because of competition for forage resources. However, maintaining the AML for horses, implementing monitoring and gathering plans, and allowing water developments would all serve to effectively distribute and limit the growth of wild horse herds, consequently minimizing effects on livestock grazing.

Implementation of livestock grazing management actions could have both beneficial and adverse impacts on livestock operators. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels and would not result in any additional grazing pressure on available forage. Most impacts would occur from adjustments for the purposes of complying with the Wyoming Standards for Healthy Rangelands. Such adjustments could include modified turnout dates, shorter grazing periods, growing season rest, riparian exclosures, forage utilization levels, and livestock conversions. Although these adjustments would benefit long-term forage production and consequently livestock growth rates, adverse impacts on livestock operators could occur in the short term. The extent of any impact on livestock grazing operations would depend on the flexibility of the individual operator to implement and respond to these adjustments.

Livestock water developments would provide additional watering sites, thereby improving livestock distribution and reducing competition with other grazers. Requiring that livestock range improvements and water developments improve resource conditions and/or enhance livestock distribution could necessitate additional planning in constructing such developments but would improve long-term forage production and prevent overuse of vegetation resources. Within sensitive wildlife habitat, livestock water developments would be allowed only if resource conditions were improved. This could further improve construction planning of such developments. Salt and mineral placement restrictions (placement prohibited within 500 feet of riparian habitat, historic trails, and special status species habitat) could require additional planning and effort but would help distribute forage use and reduce adverse impacts on rangeland resources. Greater distribution of livestock and improvement of vegetation would directly benefit livestock operators by facilitating compliance with the Wyoming Standards for Healthy Rangelands.

Vegetation management activities would most likely have beneficial effects on livestock grazing management. Any actions designed to enhance vegetative conditions would indirectly benefit livestock by enhancing and increasing forage production. Vegetation treatments and manipulation could have short-term effects on livestock grazing through vegetation removal, but long-term benefits would be realized through enhanced forage production. Preventing and controlling the spread of invasive plant species would also benefit livestock by reducing competition with native plants, and consequently maintaining or improving forage production.

Activities associated with wildlife habitat management would generally benefit livestock grazing operations through habitat enhancement measures that consequently improve forage production. However, adverse effects could also result because of the inherent competition between big game species and livestock for forage resources. This competition is more pronounced with elk than with antelope or mule deer because of dietary preference. Similar to livestock, elk are considered grazers that prefer grasses, while the preference for mule deer and antelope is to browse shrub species. Large concentrations of these big game animals can occur within portions of the planning area (Map 51), which could require some livestock operators to alter grazing management practices to comply with the Wyoming Standards for Healthy Rangelands. Uneven distribution of big game causes some grazing allotments to receive a disproportionate amount of the total wildlife grazing within the planning area, thereby putting additional strain on the forage resources within those allotments. This is especially true for allotments located either entirely or partially within the south-central portion of the planning area, including the core area, which is birthing and wintering habitat to a majority of the big game populations that inhabit the planning area. Although the population objective for elk would vary between the No Action Alternative (500) and the action alternatives (1,200), impacts on allotments located within the south-central portion of the planning area would remain approximately the same among the alternatives because of the expectation that the elk population in this area would not change considerably. Achieving wildlife population objectives (Section 4.4.6) and implementing the various management options available to livestock operators would help minimize effects. Further effects could occur if management actions resulted in increased wildlife populations, which could reduce available forage for livestock. It is unlikely that this would occur, because of WGFD efforts to maintain objectives. Overall adverse impacts could be slightly greater under this alternative than under the No Action Alternative because the elk population objective would be increased to 1,200. This would require an increase of 1,513 AUMs for elk, which is insignificant when compared to the available forage of the total planning area. Beneficial impacts would also likely be greater than under the No Action Alternative because of expanded protection measures for greater sage-grouse. Placing a controlled surface use stipulation on sage-grouse nesting habitat and increasing the amount of sage-grouse winter habitat subject to seasonal limitations would reduce the level of surface disturbing activities occurring in these areas, thereby reducing related forage removal and degradation. Animal damage control for livestock protection would emphasize nonlethal methods; control techniques and methods would be discussed at an annual meeting. The effects on livestock operations would depend on control techniques and methods. Impacts would be less than under Alternatives 2 and 3, and slightly greater than under the No Action Alternative and Alternative 1.

Approximately 10,860 AUMs within the JMH CAP planning area (see Table 4-11 at the end of this chapter) would be necessary to support the WGFD herd unit population objectives for elk (1,200), mule deer (4,000), antelope (6,000), and wild horses (415–600). Estimates of AUMs were based on AUEs specified in the Draft Environmental Impact Statement for the Proposed Grazing Management Program for the Salt Wells-Pilot Butte Area, 1983. This use, combined with the anticipated use of 11,569 AUMs for livestock, could degrade forage resources on some allotments and thus jeopardize compliance with the "Wyoming Standards for Healthy Rangelands." This could result in the need to make grazing adjustments and to implement appropriate actions to comply with the standards.

Management of heritage sites would generally be limited to relatively small areas. Even under the most intense management (i.e., excavation), the amount of acreage disturbed would be very small. These activities are not anticipated to have measurable impacts on livestock forage resources. Impacts could occur if heritage sites were fenced from livestock use, causing a loss of available forage. However, given the size of most heritage sites, this impact would be minimal. Other impacts could occur because of restrictions on surface disturbing activities near heritage sites, which might preclude the construction of range improvements designed to facilitate livestock grazing. In contrast, such restrictions would provide protection to vegetation resources, which in turn could maintain or enhance forage conditions. Effects on vegetation resources near the paleosol deposition area would most likely be less extensive than under the No Action Alternative because of management of this area as an archeological district. Management actions would increase protections from surface disturbing activities, thereby reducing adverse impacts on forage resources.

Recreational activities would likely not impact livestock grazing activities except by limited human disturbance. Some impacts might result from the temporary removal of vegetation by campers in concentrated areas, but any impact would be negligible. The use of OHVs would not impact livestock if this recreational activity stayed within authorized areas. However, unauthorized OHV activity could affect livestock grazing by damaging vegetation resources and consequently reducing available forage.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads, and oil and gas development, including construction of well pads, mud pits, and roads, could impact livestock grazing. Land clearing and grading activities necessary for construction remove vegetation and reduce the forage base. Impacts stemming from mineral development would be similar to those under Alternative 3, with development of 205 wells and anticipated surface disturbance of approximately 1,600 acres over the planning period (Appendix 13, Table A13-7). However, the strategy for implementing fluid mineral leasing decisions under this alternative (Appendix 17) could affect the degree of impact in certain areas. There would be no new oil and gas leasing in the majority of Area 3 (Figure A17-1), which could reduce impacts in this area over the long term. However, in the short term, this could result in more rapid exploration and development of existing leases in Area 3 because there would not be any opportunity to renew leases upon expiration. Moreover, given that much of this area is within the high development potential area (Map 69), successful well completion rates are expected to be high. These factors could result in the removal of a substantial amount of forage over a relatively short period of time, potentially increasing short-term impacts on livestock grazing compared with Alternative 3. Standards for reclamation of linear surface disturbances would help mitigate potential adverse impacts on livestock grazing due to short-term vegetation removal. Effects from most mineral development would be short term because the vegetation conditions on most sites are ultimately reclaimed. Salable mineral activity is not expected to have any effect on livestock grazing management because of the limited activity and the limited area of vegetation removal. Any mineral withdrawals would prevent vegetation removal and the potential subsequent decrease in the forage base.

The protections afforded to special management areas and other management areas would generally benefit livestock grazing. Management actions aimed at conserving sensitive vegetation communities and limiting surface disturbing activities in these areas would benefit livestock grazing by enhancing overall vegetation conditions and consequently increasing forage production. These effects would most likely be greater than under the No Action Alternative because of the implementation of management actions associated with the expansion of Steamboat Mountain ACEC and management of the West Sand Dunes Archaeological District and the Steamboat Mountain Management Area.

4.4.5 Potential Impacts on Vegetation

Vegetation management includes all plants, the habitats they create, and watershed stability. Resources include species that are protected under the Endangered Species Act (ESA), identified as Wyoming BLM sensitive species, state species of concern, rare plant communities and associations, and noxious weeds. Impacts on resources and resource users resulting from implementation of vegetation management actions are discussed in those particular resource sections. This section describes potential impact on vegetation resources resulting from the implementation of management actions for other resource management categories.

Effects on vegetation would be considered significant if the viability of protected plant species were jeopardized, with little likelihood of reestablishment after disturbance, or if actions would result in the need to list a species under the ESA. A lesser effect would result if the disturbed population could be reestablished to its original state and condition or if the population were sufficiently large or resilient to respond to disturbance without a measurable change. An impact would also be significant if there is a loss of habitat function or habitat value in BLM sensitive species habitats. An impact would be significant if reclaimed areas did not attain adequate vegetation ground cover and species composition to stabilize the site within 5 years of disturbance or if there were invasion and establishment of noxious weeds that contributed to unsuccessful revegetation. The significance of an impact would also depend on the importance of the resource and the proportion of the resource that would be affected relative to its occurrence in the vicinity. An increase in population numbers in response to an enhanced habitat or the increased viability of a species would be viewed as a beneficial impact.

For analysis purposes, it is assumed that adequate vegetative ground cover and species composition for site stabilization would occur in 3 to 5 years and that brush reestablishment in disturbed areas would not create a vegetative landscape similar to adjacent lands for more than 20 years. Adequate forage is assumed to be available for current wildlife objective numbers, and it is assumed that all management actions associated with the protection of wildlife habitat and cultural resources directly benefit vegetation management. All surface disturbing activities would require reclamation according to the Rock Springs District Reclamation Monitoring Plan, and new oil and gas leases would have stipulations for protection of threatened, endangered, and Wyoming BLM sensitive species.

4.4.5.1 Common to All Alternatives

Implementation of the Wyoming Standards for Healthy Rangelands as the minimum acceptable conditions for public rangelands would increase the health and diversity of vegetation communities. By ensuring that all activities conducted on public lands within the planning area are designed to maintain and enhance native vegetation and promote healthy watersheds, negative impacts on plants and their habitat would be minimized to an acceptable level. Monitoring and evaluation of rangeland uses and effects would occur. Results of these evaluations would determine whether the objectives of this plan are being met, and if not, management actions would be undertaken to improve the conditions of native vegetation.

The potential for additional strain on vegetation resources exists within portions of the planning area (south-central) from potential concentrations of grazing animals. Heavy concentrations of grazing animals could result in overutilization of vegetation. However, monitoring and evaluating habitats for compliance with the Wyoming Standards for Healthy Rangelands would provide information on vegetation resources before impacts became significant.

Wildfires usually have more adverse impacts than do prescribed burns because wildfires generally cover larger areas and remove more vegetation and, if burning outside established prescription, often burn with enough heat to adversely affect soil organisms as well as kill the root system of some plants and the existing seed bank. This could result in long-term adverse impacts by compromising future plant recruitment and growth rates. Prescribed fire burning within prescription areas would generally have a long-term beneficial effect on vegetation by increasing age and species diversity of plant communities, increasing plant vigor, and enhancing nutrient cycling.

Watershed management would provide benefits to native vegetation by maintaining or restoring healthy and diverse plant communities through the establishment of DPC objectives, placement of buffer zones around riparian areas, and restrictions on surface disturbance within riparian areas and floodplains. Actions that would maintain or improve watershed conditions would generally benefit vegetation communities.

Valid existing mineral rights (existing fluid mineral leases and mining claims) cover more than half of the planning area, which could have adverse impacts on vegetation because of a lack of requirements for mitigation that would protect vegetation resources. Adverse effects could be reduced by Conditions of Approval (COA) on Applications for Permit to Drill (APD) within these areas, which would be based on site-specific analysis and would establish specific, necessary mitigation measures not covered by lease stipulations for resource and environmental protection. The severity of effects would depend on the amount of activity and the success of reclamation efforts for disturbed areas.

Reclamation after surface disturbing activities would be conducted in accordance with the Wyoming Policy on Reclamation (IM No. WY-90-231) and the Rock Springs District Reclamation Program. Achievement of the revegetation objectives under reclamation would restore native plant communities in the long term, providing healthy habitat for colonization and expansion of native plant species. Monitoring of disturbed sites would enhance reclamation success. Containerized shrub seedlings used in reclamation practices would help reestablish shrubs in sensitive areas, decreasing adverse impacts in the short term. Significant impacts could occur if adequate revegetation measures were not implemented and monitored to ensure successful revegetation.

The management actions established for special management areas would generally benefit vegetation resources. Protections aimed at conserving sensitive vegetation communities, and limitations on mineral development and other surface disturbing activities, would benefit vegetation by enhancing overall conditions.

4.4.5.2 No Action Alternative

Both wildland and prescribed fires could have short-term localized impacts on vegetation; however, the long-term effect of fire would be the conversion of shrubs to grasslands. Prescribed burning, the preferred method of vegetation treatment, would cause a long-term decrease in sagebrush species, a short-term increase in annual weeds, and a long-term increase in grass species. Vegetative cover would be reduced during the first two growing seasons but would likely improve in the third year following a prescribed burn, resulting in beneficial effects. Approximately 5,000 acres within the planning area are proposed for prescribed burns during the planning period.

Wildfires cause a short-term loss of vegetation. They usually occur in the high-density sagebrush, juniper, conifer, and aspen communities, which leads to grasses' and forbs' replacing shrubs. The surface disturbance associated with fire line construction, the use of heavy equipment, and other fire suppression activity often damages or destroys vegetation and accelerates natural soil erosion. Fire suppression activities within special status plant species habitat would be limited to existing roads and trails to prevent any further impact on these species from crushing or removal.

The effect of fire within the basin big sagebrush/lemon scurfpea community would be adverse because of the unlikelihood of reestablishing of this association within a few years after a fire. Additional prescriptions for managing fire would include full suppression in the basin big sagebrush/lemon scurfpea plant community, providing protection for this unique vegetation association, which stabilizes the sandy soils in this part of the planning area and provides habitat and forage for wildlife.

Watershed management would provide benefits to native vegetation by maintaining or restoring healthy and diverse plant communities through the establishment of DPC objectives, placement of buffer zones around riparian areas, and restrictions on surface disturbance within riparian areas and floodplains. Actions that would maintain or improve watershed conditions would generally benefit vegetation communities.

The vegetation communities likely to be affected by livestock grazing would include the saltbush, low-density sagebrush, high-density sagebrush, aspen, riparian, and grassland communities. Livestock AMPs, or other activity plans intended to serve as the functional equivalent of an AMP, would address achievement of DPC objectives, thereby minimizing impacts on uplands and riparian areas.

Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels; thus, direct impacts on vegetation would likely be comparable to current conditions. Some localized overuse of forage would continue, primarily in riparian zones and around watering holes and dunal ponds. When forage is overused, plants cannot provide for their own growth, maintenance, and reproduction and are eventually replaced by less desirable species that have little or no forage value. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing would ensure the viability of vegetation resources.

Livestock water developments could adversely affect vegetation. Areas around existing water sources receive more use than the adjacent uplands, increasing soil exposure and erosion and weed invasion. This would continue in the long term as new water developments were created.

Fencing would be used to manage livestock grazing to improve forage and habitat condition on upland and wetland sites. Range condition should improve in localized areas where fences were used to implement grazing management plans or to better distribute livestock. More diverse vegetation would be produced, and soil erosion would be reduced. Herding control would be encouraged as an alternative to fencing, which could also provide benefits to vegetation.

Season-long grazing use of range grasses has significant adverse impacts on their physiological health. Grasses that are grazed too long, too closely, or too frequently at the same stage of growth display marked reductions in vigor and health, becoming more susceptible to drought, injury, and lower production. Decline in soil condition, plant cover, and species composition encourages the invasion and growth of noxious weeds. Early spring grazing would also have adverse impact on range grass and forb species through the trampling of wet soils, uprooting of seedlings, and mechanical injury to both mature plants and new seedlings. This adverse impact would be recognized in AMPs, or other activity plans intended to serve as the functional equivalent of an AMP and would be minimized through implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing.

The management of heritage sites would indirectly benefit vegetation through preservation of rare and sensitive plant communities as well as general vegetation characteristics. Disturbance and removal of vegetation could occur through activities related to management of heritage resources; however, any impact would generally be minor and limited to relatively small areas. Even under the most intense management (i.e., excavation), the amount of vegetation disturbed would be very small.

Recreational management actions could have localized impacts on vegetation, primarily from unauthorized OHV use. The greatest loss of vegetation associated with OHV use would result from unauthorized use of previously undisturbed areas. All vegetation classifications could be damaged by unauthorized OHV use, but such damage would be most common in badlands, low-density sagebrush, juniper, saltbush, and sand dune vegetation communities. A long-term loss of native vegetation due to weed invasions would also be expected with OHV use. However, these effects are anticipated to be localized.

Recreational activities, such as camping and recreational mining, could also damage vegetation through concentrated use, trampling, and digging. Camping would be allowed within 200 feet of water sources except in areas where it would be necessary to protect water quality and wildlife and livestock watering areas. If resource damage occurred, those areas would be closed to camping to minimize long-term adverse impacts. Recreation events such as OHV rallies could damage or totally remove vegetation from portions of the event route. Special recreation use permits for such events would require timing and avoidance of key areas and reclamation of the disturbed area to minimize adverse impacts on vegetation resources. Adverse effects of recreational mining would be minimal because of the small amount of area disturbed.

Surface disturbance associated with livestock water developments or mineral activities other than oil and gas would account for approximately 119 acres of disturbance to vegetation (oil and gas surface disturbance is detailed below). This total would include 23 acres (worst case) disturbed during construction of livestock water developments (assuming 1 acre per development), 1 acre for wild horse traps, 55 acres for mineral location (with no more than 5 acres disturbed at one time), 15 acres for solid mineral development, and 25 acres for mineral material sales.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads, and oil and gas development, including construction of well pads, mud pits, and roads, could adversely impact vegetation resources. Land clearing and grading activities necessary for construction remove vegetation and compact soils, which contributes to noxious weed invasion. The amount of surface disturbance associated with fluid mineral development would be approximately 200 acres in the most active year and approximately 1,800 acres over the planning period (Appendix 13, Table A13-7), representing an insignificant impact on vegetation when compared to the size of the planning area. However, this impact could be significant if the vegetation lost were of a type that was not abundant within the planning area. Loss of vegetation could be short term or long term depending on the success of reclamation efforts for disturbed areas. However, even if reclamation were successful, some original plant communities, particularly shrub communities and stabilized sand dunes, would not be likely to be reestablished to their predisturbance structure and density for more than 20 years. The basin big sagebrush/lemon scurfpea community would likely take up to 70 years to reach the structure and density of predisturbance conditions. Some of these communities would be provided protection by controlled surface use or by NSO requirements, preserving the character of vegetation communities. Disturbed sites would be monitored for effective reclamation, and linear ROWs would avoid BLM Wyoming sensitive species locations. Effects from most mineral development would be temporary because the vegetation conditions on most sites would ultimately be reclaimed. An adverse impact on vegetation could result if development outpaced reclamation and reestablishment of vegetation.

Constructing wells or access roads in stabilized dunes would cause direct loss of anchoring vegetation, creating active dunes that might not stabilize with natural vegetation within the planning period (20 years). One such stabilized dune community, the basin big sagebrush/lemon scurfpea association, is not known to exist elsewhere in the country to the quantity and extent it does in the planning area. Disturbance of this plant community would likely result in the long-term loss of this unique vegetation type for the life of this plan and would therefore result in a significant impact.

A large portion of the planning area would be withdrawn from locatable mineral exploration and development and mineral material sales. Approximately half of the known unique plant communities of basin big sagebrush/lemon scurfpea and aspen would be protected from locatable mineral activity through the withdrawal of the Greater Sand Dunes ACEC and South Pass Summit. Areas would be closed to mineral material sales through the closure of the Greater Sand Dunes ACEC, Steamboat Mountain ACEC, and the Sand Dunes Wilderness Study Area (WSA). Some of the rare aspen communities would also be closed to mineral material sales through the closure of South Pass Summit. Subjecting areas to mineral activity could result in direct removal of shrubs and trees, causing adverse long-term effects on these communities through conversion to grassland and nonwoodland-type areas. The majority of basin big sagebrush/lemon scurfpea and other mountain shrub communities would be open to coal exploration and development, which could have adverse long-term effects because of direct removal of these communities and long-term reclamation periods. However, it would be unlikely that any locatable mineral development would take place during the planning period because of projected demand.

Noxious weeds are expected to increase under this alternative as a result of surface disturbing activities. Weeds have direct adverse impacts on native vegetation and, once established, are extremely costly and time consuming to control and even harder to eradicate. Vehicles, horses, wildlife, livestock, campers and hikers, and just about any other mobile conveyance would spread weed seeds from their source into disturbed areas. Most adverse impacts due to noxious weeds and other invasive species are expected to occur adjacent to roads because they convey high levels of traffic to and from the planning area.

Although vegetation would be affected by surface disturbing activities within the planning area, specific mitigation measures would be implemented to protect certain species. The two federally listed plant species potentially occurring within the planning area, Ute ladies'-tresses and blowout penstemon, would not likely be adversely affected. Required surveys for threatened and endangered species before surface disturbance activities and subsequent protection measures developed by BLM in conjunction with the U.S. Fish and Wildlife Service (FWS) would help mitigate potential impacts. Searches for special status species would be required in potential habitats for those species before approval of any project or activity in those areas. Known locations of these communities would be protected and closed to or withdrawn from OHV use, surface disturbance and disruptive activities, locatable mineral development, mineral material sales, and coal and sodium exploration. Wyoming BLM sensitive plant species would also be avoidance areas for ROWs. These requirements would reduce adverse impacts to special status plant species communities; however, existing fluid mineral leases do not contain lease stipulations protecting these species. COAs on APDs within existing lease areas could be applied, which would be based on site-specific analysis and would establish specific, necessary mitigation measures not covered by lease stipulations for resource and environmental protection, reducing potential adverse effects that would occur if habitat were disturbed during development.

4.4.5.3 Alternative 1

Impacts resulting from management of heritage resources, the fire program, and vegetation resources would be similar to those under the No Action Alternative.

The effects of watershed management actions would be similar to those under the No Action Alternative, except that these beneficial impacts would be greatly reduced because there would be fewer restrictions on surface disturbing activities and smaller buffer zones around riparian areas and floodplains.

Livestock grazing management actions under this alternative could have greater adverse impacts on vegetation resources than those under other alternatives. The anticipated use of livestock AUMs would increase over the planning period to the permitted active use amount, which is approximately double the historic use. Together with forage utilization by big game species, this would further increase grazing pressure on vegetation resources, potentially having an adverse impact if the long-term productivity of the range were compromised. This additional impact would be realized only on allotments that are not currently close to using their fully permitted AUMs. Riparian exclosures would be removed and the area made available to livestock grazing. New exclosures would not be considered unless they benefited commodity uses. This would have the potential to adversely affect vegetation through overuse of particular areas. Less restrictive measures for range improvements, water developments, and salt and mineral placement could limit the protections afforded to vegetation resources. Full implementation of these management actions could present some difficulty for allotments in complying with the Wyoming Standards for Healthy Rangelands.

The effects of OHV use and other recreational activities would be greater and would occur over more of the planning area under this alternative than under the No Action Alternative because of fewer restrictions on use in the planning area and increased development that would allow for increased access. OHV use would be limited to existing roads and trails, rather than limited to designated roads and trails, in more of the planning area (Map 19), and more roads would be developed that would allow for increased OHV use and associated human activity.

The effects of surface disturbing activities on vegetation resources are expected to be similar under this alternative to those under the No Action Alternative, except these adverse impacts would likely be greater because of increased development and decreased restrictions on surface disturbance. More areas would be disturbed. Effects to sensitive plant communities would be reduced only by the designation of the Greater Sand Dunes ACEC as an avoidance area (Map 16).

Surface disturbance associated with livestock water developments or mineral activities other than oil and gas would be the same as those under the No Action Alternative.

The planning area would be open for new mineral development. The amount of surface disturbance associated with fluid mineral development would be approximately 220 acres in the most active year and approximately 2,100 acres over the planning period (Appendix 13, Table A13-7), which would represent an insignificant impact on vegetation when compared to the size of the planning area. However, this impact could be significant if the vegetation lost were of a type that was not abundant within the planning area. The impacts on vegetation would be similar to those under the No Action Alternative. A significant adverse impact on vegetation could result if development outpaced reclamation and reestablishment of vegetation.

A large portion of the planning area would be open to locatable mineral exploration and development (Map 23) and mineral material sales (Map 24). Adverse effects on all vegetation communities would be expected to be greater than under the No Action Alternative because of the increased area available to development. The majority of basin big sagebrush/lemon scurfpea and other mountain shrub communities would be open to coal exploration and development, as under the No Acton Alternative; however, it is unlikely that any development would take place during the planning period because of projected demand.

The potential effects on the two federally listed plant species potentially occurring within the planning area, Ute ladies'-tresses and blowout penstemon, would be the same as those discussed under the No Action Alternative.

In any potential habitats for special status species, searches for the species would be required before approval of any project or activity in those areas, as under the No Action Alternative. Known locations of these communities would be avoidance areas for surface disturbing activities. New leases would contain stipulations that protect these communities, and COAs on APDs within existing lease areas could be applied, which would be based on site-specific analysis and would establish specific, necessary mitigation measures not covered by lease stipulations for resource and environmental protection, reducing potential adverse effects that would occur if habitat were disturbed during development. Overall, adverse effects on special status plant species could be significant because of the lack of complete protection of these communities from the majority of surface disturbing activities within the planning area.

The beneficial impacts on vegetation resources from management activities related to special management areas could be reduced under this alternative compared with the No Action Alternative by eliminating certain management actions associated with the removal of the ACEC designation from Steamboat Mountain ACEC and the reduction of the viewshed associated with the South Pass Historic Landscape. The vegetation communities in the Steamboat Mountain area would be the most affected. These changes would allow more surface disturbance, potentially reducing overall benefits to vegetation resources.

4.4.5.4 Alternative 2

Impacts resulting from management of heritage resources would be the same as those under the No Action Alternative.

The effects of watershed management actions would be the same as those under the No Action Alternative; however, these beneficial impacts would be greatest under this alternative because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.

The increased restrictions on livestock grazing activities under this alternative would likely have beneficial impacts on vegetation resources. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels. Using modified turnout dates as the primary method for complying with the Wyoming Standards for Healthy Rangelands could have beneficial effects on vegetation resources by reducing grazing pressures. Increasing the buffer area for salt and mineral placement to one-half mile from special status plant species would require more planning and effort on the part of livestock operators and could increase related costs. Whether the one-half-mile distance would provide greater protection to vegetation than would some shorter distance would depend on the topography, drainage patterns, and the amount of vegetative cover at a particular location. Riparian exclosures and water developments would be allowed if they preserved sensitive resources or improved habitat and resource conditions, having a beneficial impact on vegetation resources.

Vegetation treatments would be limited to noxious weed control. The benefits associated with improved forage production capacity and the conversion of shrub habitat to grasslands through prescribed burns or other treatments would not occur under this alternative. Natural succession would be allowed. Limited fire suppression (as opposed to full fire suppression) would be applied for basin big sagebrush/lemon scurfpea vegetation associations, but this could have an adverse effect on vegetation. This vegetation association stabilizes the sandy soils in portions of the planning area, and the reestablishment of the association within a few years after a fire would be unlikely, resulting in a long-term loss of this unique vegetation type and therefore a significant impact.

The adverse effects of OHV use and other recreational activities would be less under this alternative than under the No Action Alternative because of decreased development and increased restrictions on use in the planning area, which would decrease access. More of the planning area would be closed or restricted to OHV use, thus reducing access to a large portion of the planning area (Map 30). Camping in groups of five or more would be monitored and only allowed in designated areas, decreasing adverse effects on rare and sensitive plant communities and riparian areas.

Development of a transportation plan specific to the planning area would further reduce adverse impacts on vegetation from ROWs, roads, OHV use, and general access. This plan would provide for appropriate access routes that would enable maximum protection of rare plant communities and sensitive resources.

Surface disturbance associated with livestock water developments or mineral activities other than oil and gas would account for approximately 64 acres of disturbance to vegetation (oil and gas surface disturbance is detailed below). This total would include 11 acres (worst case) disturbed during construction of livestock water developments (assuming 1 acre per development) and 53 acres for mineral location on existing claims (with no more than 5 acres disturbed at one time).

This alternative provides the least opportunity for mineral exploration and development, which would minimize related losses of vegetation. The effects of surface disturbing activities for mineral development and ROWs are expected to be much less than under the No Action Alternative because of increased restrictions (controlled surface use or NSO requirements) and decreased opportunity for development. The amount of surface disturbance associated with fluid mineral development would be approximately 170 acres in the most active year and approximately 1,300 acres over the planning period (Appendix 13, Table A13-7), which would represent an insignificant impact on vegetation when compared to the size of the planning area, depending on the vegetation type affected. Adverse impacts on sensitive plant communities would be reduced by managing the Greater Sand Dunes ACEC, the connectivity area, and the Steamboat Mountain ACEC as avoidance areas (Map 27). Other areas important to rare and sensitive plant communities would be ROW exclusion areas, which include WSAs and the paleosol deposition area. Effects from most mineral development would be temporary because the vegetation conditions on most sites would ultimately be reclaimed. However, an adverse impact on vegetation could result if development outpaced reclamation and replacement of forage or if the amount of a particular type of vegetation that was disturbed were small in comparison to other vegetation in the planning area.

There would be no effects on vegetation from new locatable mineral development, mineral material sales, coal leasing, or coal and sodium exploration because the entire planning area would be withdrawn from or closed to these activities.

Adverse impacts of noxious weed infestations on vegetation resources would be less than under the No Action Alternative because of an anticipated decrease in access and activity that would otherwise introduce or aid in spreading noxious weed or other invasive species in the planning area.

Potential effects on the two federally listed plant species potentially occurring within the planning area, Ute ladies'-tresses and blowout penstemon, would be the same as those discussed under the No Action Alternative.

Searches for special status species would be required in potential habitats for the species before approval of any project or activity in those areas. Known locations of these communities would be designated as an ACEC, with measures providing additional protection. Known locations would also be protected and closed to OHV use, ROWs, surface disturbance, locatable mineral development, mineral material sales, coal and sodium exploration, and geophysical exploration. Effects of existing fluid mineral leases would be the same as those described under the No Action Alternative; however, new leases would contain stipulations that protect these communities. Overall, impacts on special status plant species could occur on existing leases, but effects would be reduced through application of COAs designed to establish specific, necessary mitigation measures not covered by lease stipulations for resource and environmental protection.

Actions related to special management areas could have a greater beneficial impact on vegetation resources under this alternative. Management actions associated with the expansion of the Greater Sand Dunes ACEC and Steamboat Mountain ACEC would benefit rare and sensitive plant communities through further restrictions on activities within these sensitive areas (Map 37). The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area, and the Steamboat Mountain ACEC would be expanded to include the area of highest concentration and overlap of big game habitat features, natural systems, and cultural values, including a portion of the basin big sagebrush/lemon scurfpea plant community. Management actions associated with designating special status plant species habitat and the cushion plant communities as ACECs, and designation of the Pinnacles Geologic Feature ACEC, would also benefit these communities and protect them from disturbance.

Management actions associated with the designation of the cushion plant community, the flockets area within the WSA portion of the Greater Sand Dunes ACEC, and a portion of the basin big sagebrush/lemon scurfpea association as research natural areas would further benefit these plant communities.

4.4.5.5 Alternative 3

Impacts associated with noxious weed and other invasive species infestations resulting from surface disturbing activities and impacts from management of heritage resources would be similar to those under the No Action Alternative.

Areas impacted by prescribed burns or wildland fires would be rested for 24 months after treatment to allow the vegetation to adequately reestablish before it was grazed. Full fire suppression in the basin big sagebrush/lemon scurfpea plant community would be applied to provide protection for this unique vegetation association. This vegetation association stabilizes the sandy soils in portions of the planning area. Reestablishment of this association in these soil conditions within a few years after a fire would be unlikely.

The effects of watershed management actions would be the same as those under the No Action Alternative, except that these beneficial impacts could be greater because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.

Livestock grazing management actions under this alternative would have impacts on vegetation similar to those under the No Action Alternative. Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels and would not result in any additional grazing pressure on available forage. Construction and maintenance of livestock range improvements and water developments would be designed to improve resource conditions and/or enhance livestock distribution. This would maintain healthy forage conditions and prevent overuse of vegetation resources. Prohibiting salt and mineral supplements within one-quarter mile of special status plant species would ensure that these species would not be adversely impacted.

Development of a transportation plan specific to the planning area would further reduce adverse impacts on vegetation from ROWs, roads, OHV use, and general access. This plan would provide for appropriate access routes that enabled maximum protection of rare plant communities and sensitive resources.

Any adverse effects of OHV use and other recreational activities would be slightly less under this alternative than under the No Action Alternative because of restrictions associated with management of additional ACECs. OHV use would be limited to designated roads and trails in more areas, further reducing access to portions of the planning area (Map 41). Camping would be allowed only in designated areas, decreasing adverse effects on rare and sensitive plant communities and riparian areas. Recreational mining would be limited to a 5-acre site, and a recreation site plan would be prepared and implemented to manage the site for recreational purposes.

The adverse impacts related to surface disturbing activities are expected to be slightly less than those described under the No Action Alternative because of additional controlled surface use requirements (Map 39) and management actions associated with ACECs. Adverse impacts to sensitive plant communities would be reduced by the designation of the WSAs and the southern portion of Steamboat Mountain as exclusion areas.

The entire planning area would be open for consideration for fluid mineral leases. Impacts on vegetation from mineral exploration and development and other surface disturbances in support of these activities (i.e., ROWs) would be similar to those under the No Action Alternative; however, an adaptive management strategy would be implemented under this alternative, which would establish indicators to inform BLM of adverse effects of actions within the planning area and prevent them from becoming significant through BLM's ability to control timing of development activities.

Surface disturbance associated with livestock water developments or mineral activities other than oil and gas would be the same as that under the No Action Alternative.

The extent of surface disturbance associated with fluid mineral development would be approximately 190 acres in the most active year and approximately 1,600 acres over the planning period (Appendix 13, Table A13-7), which would represent an insignificant impact on vegetation when compared to the size of the planning area. The level of impact on vegetation types would depend on the location of the development and the vegetation type affected. Standards for reclamation of linear surface disturbances would mitigate any potential impact on vegetation removal. Effects from most mineral development would be temporary because the vegetation conditions on most sites would ultimately be reclaimed. An adverse impact on vegetation could result if development outpaced reclamation and replacement of forage.

A large portion of the planning area would be open to locatable mineral activity (Map 45); however, adverse effects on all vegetation communities would be less than those under the No Action Alternative because additional areas (such as greater sage-grouse leks) would be withdrawn from all mineral location.

A portion of the rare plant community of basin big sagebrush/lemon scurfpea would be closed to mineral material sales through the closure of the Greater Sand Dunes ACEC and the Sand Dunes WSA (Map 46); however, adverse effects would occur on the remainder of the community. Some of the rare aspen communities would also be closed to mineral material sales through the closure of South Pass Summit. Any impact on these communities would likely be significant because of the species' limited ability to reestablish after disturbance.

The unique cushion plant community would be closed to coal and sodium exploration (Map 43), but the majority of basin big sagebrush/lemon scurfpea and other mountain shrub communities would be open. Although any development could have adverse impacts on these vegetative communities, the impact would not likely be significant because the demand for this resource in this particular area is negligible.

Potential effects on the two federally listed plant species potentially occurring within the planning area, Ute ladies'-tresses and blowout penstemon, would be the same as those discussed under the No Action Alternative.

Searches for special status species would be required in any potential habitats for such species before approval of any project or activity in those areas. Known locations would be protected and closed or withdrawn from OHV use, ROWs, surface disturbance, locatable mineral development, mineral material sales, coal and sodium exploration, and geophysical exploration. Effects of existing fluid mineral leases would be the same as those described under the No Action Alternative; however, new leases would contain stipulations that protect special status species communities.

Management actions associated with the expansion of the Greater Sand Dunes and Steamboat Mountain ACECs would benefit rare and sensitive plant communities through further restrictions on activities within these sensitive areas (Map 48). The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area, and the Steamboat Mountain ACEC would be expanded to include Indian Gap and the face of Steamboat Mountain. Management actions associated with designating special status plant species habitat and the cushion plant communities as ACECs would also benefit and protect these communities.

4.4.5.6 Proposed JMH CAP

Implementation of the Wyoming Standards for Healthy Rangelands as the minimum acceptable conditions for public rangelands would increase the health and diversity of planning area vegetation communities. By ensuring that all activities conducted on public lands within the planning area were designed to maintain and enhance native vegetation and promote healthy watersheds, negative impacts on plants and their habitat would be minimized to an acceptable level. Monitoring and evaluation of rangeland uses and effects would occur. Results of these evaluations would determine whether the objectives of this plan were being met; if not, management actions would be undertaken to improve the conditions of native vegetation.

The potential for additional strain on vegetation resources exists within portions of the planning area (south-central) from potential concentrations of grazing animals. Heavy concentrations of grazing animals could result in overutilization of vegetation. However, monitoring and evaluation of habitats to comply with the Wyoming Standards for Healthy Rangelands would provide information on vegetation resources before impacts became significant.

Both wildland and prescribed fires could have short-term localized impacts on vegetation; however, the long-term effect of fire would be the conversion of shrub habitat to grasslands. Prescribed burning, the preferred method of vegetation treatment, would cause a long-term decrease in sagebrush species, a short-term increase in annual weeds, and a long-term increase in grass species. Vegetative cover would be reduced during the first two growing seasons but would likely improve in the third year following a prescribed burn, resulting in beneficial effects. Approximately 5,000 acres within the planning area are proposed for prescribed burns during the planning period.

Wildfires cause a short-term loss of vegetation. Wildfires usually occur in the high-density sagebrush, juniper, conifer, and aspen communities, which leads to grasses' and forbs' replacing shrubs. The surface disturbance associated with fire line construction, the use of heavy equipment, and other fire suppression activity often damage or destroy vegetation and accelerate natural soil erosion. Fire suppression activities within special status plant species habitat would be limited to existing roads and trails to prevent any further impact on these species from crushing or removal.

Wildfires usually have more adverse impacts than do prescribed burns because wildfires generally cover larger areas and remove more vegetation and, if burning outside established prescription, often burn with enough heat to adversely affect soil organisms and kill the root system of some plants and the existing seed bank. This could result in long-term adverse impacts by compromising future plant recruitment and growth rates. Prescribed fire burning within prescription areas would generally have a long-term beneficial effect on vegetation by increasing age and species diversity of plant communities, increasing plant vigor, and enhancing nutrient cycling.

Fire within the basin big sagebrush/lemon scurfpea community would have an adverse effect because of the unlikelihood of reestablishing this association within a few years after a fire. Additional prescriptions for managing fire would include full suppression in the basin big sagebrush/lemon scurfpea plant community, providing protection for this unique vegetation association, which stabilizes sandy soils in portions of the planning area and provides habitat and forage, primarily for wildlife.

Watershed management would provide benefits to native vegetation by maintaining or restoring healthy and diverse plant communities through the establishment of DPC objectives, placement of buffer zones around riparian areas, and restrictions on surface disturbance within riparian areas and floodplains. Actions that would maintain or improve watershed conditions would generally benefit vegetation communities.

The vegetation communities that would likely be affected by livestock grazing would include saltbush, low-density sagebrush, high-density sagebrush, aspen, riparian, and grassland communities. Livestock AMPs, or other activity plans intended to serve as the functional equivalent of an AMP, would address achieving DPC objectives, thereby minimizing impacts on uplands and riparian areas.

Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels; thus, direct impacts on vegetation would likely be comparable to current conditions. Some localized overuse of forage would continue, primarily in riparian zones, and around watering holes and dunal ponds. When forage is overused, plants cannot provide for their own growth, maintenance, and reproduction and are eventually replaced by less desirable species that have little or no forage value. Implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management would ensure the viability of vegetation resources.

Livestock water developments could negatively affect vegetation. Areas around existing water sources receive more use than the adjacent uplands, increasing soil exposure and erosion and weed invasion. This would continue in the long term as new water developments were created. However, effects on certain areas of sensitive habitat would be reduced because water developments would be considered only if resource conditions were maintained or improved.

Fencing would be used to manage livestock grazing to improve forage and habitat condition on upland and wetland sites. Range condition should improve in localized areas where fences were used to implement grazing management plans or to better distribute livestock. More diverse vegetation would be produced, and soil erosion would be reduced. Herding control would be considered as an alternative to fencing, which could also provide benefits to vegetation.

Season-long grazing use of range grasses has significant adverse impacts on their physiological health. Grasses that are grazed too long, too closely, or too frequently at the same stage of growth display marked reductions in vigor and health, becoming more susceptible to drought, injury, and lower production. Decline in soil condition, plant cover, and species composition encourages the invasion and growth of noxious weeds and other invasive species. Early spring grazing would also have adverse impacts on range grass and forb species through trampling of wet soils, uprooting seedlings, and mechanical injury to both mature plants and new seedlings. This adverse impact would be recognized in AMPs, or other activity plans intended to serve as the functional equivalent of an AMP, and would be minimized through implementation of the Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management.

Reclamation of surface disturbing activities would be conducted in accordance with the Wyoming Policy on Reclamation (IM No. WY-90-231) and the Rock Springs District Reclamation Program. Achievement of the revegetation objectives under reclamation would replace native plant communities in the long term, providing healthy habitats for colonization and expansion of native plant species. Monitoring of disturbed sites would enhance reclamation success. Containerized shrub seedlings used in reclamation practices would help reestablish shrubs in sensitive areas, decreasing adverse impacts in the short term.

The management of heritage sites would indirectly benefit vegetation through preservation of rare and sensitive plant communities as well as general vegetation characteristics. Disturbance and removal of vegetation could occur through activities related to management of heritage resources; however, any impact would generally be minor and limited to relatively small areas. Even under the most intense management (i.e., excavation), the amount of vegetation disturbed would be very small.

Recreational management actions could have localized impacts on vegetation, primarily from unauthorized OHV use. The greatest loss of vegetation associated with OHV use would result from unauthorized use of previously undisturbed areas. All vegetation classifications could be damaged by unauthorized OHV use, but such damage would be most common in badlands, low-density sagebrush, juniper, saltbush, and sand dune vegetation communities. A long-term loss of native vegetation due to weed invasions would also be expected with OHV use. However, these effects are anticipated to be localized.

Recreational activities, such as camping and recreational mining, could also damage vegetation through concentrated use, trampling, and digging. Camping would be allowed within 200 feet of water sources except in areas where it would be necessary to protect water quality and wildlife. If resource damage occurred, these areas would be closed to camping throughout the planning area to minimize long-term adverse impacts. Adverse effects of recreational mining would be minimal because of the small area disturbed.

Recreation events such as OHV rallies could damage or totally remove vegetation from portions of the event route. Special recreation use permits for such events would require timing and avoidance of key areas, and reclamation of the disturbed area, to minimize adverse impacts on vegetation resources.

Surface disturbance associated with livestock water developments or mineral activities other than oil and gas would be the same as that under the No Action Alternative.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and roads, and oil and gas development, including construction of well pads, mud pits, and roads, could adversely affect vegetation resources. Land clearing and grading activities necessary for construction remove vegetation and compact soils, which contributes to noxious weeds and other invasive species. Loss of vegetation could be short-term or long-term, depending on the success of reclamation efforts for disturbed areas. However, even with successful reclamation, some original plant communities, particularly shrub communities and stabilized sand dunes, would not likely be reestablished to their predisturbance structure and density for more than 20 years. The basin big sagebrush/lemon scurfpea community likely would take up to 70 years to reach the structure and density of predisturbance conditions. Some of these communities would be provided protection by controlled surface use or NSO requirements, thereby preserving the character of vegetation communities.

The extent of surface disturbance associated with fluid mineral development would be approximately 190 acres in the most active year and approximately 1,600 acres over the planning period (Appendix 13, Table A13-7), which would represent a minimal impact on vegetation overall when compared to the size of the planning area, particularly given the reclamation activities associated with each drilled well. The majority of special status plant species and unique plant communities (i.e., cushion plants) are located within Area 3 of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17). Area 3 would retain a "no lease" management prescription or be subject to leasing with an NSO stipulation that would ensure protection of special status plant species and unique plant communities in these areas, resulting in less impacts on these resources than under the No Action Alternative. A large portion of special status plant species and unique plant communities within Area 3, however, are in areas that have already been leased. These existing leases have a variety of stipulations for resource protection, some of which might not offer any protection to sensitive vegetative resources, possibly allowing significant impacts on these resources. In these cases, COAs for APDs could be applied. These would be based on site-specific analysis and would establish specific, necessary mitigation measures not covered by stipulations for resource and environmental protection. BLM specialists would review sensitive resources with lease operators to develop and implement protective measures to allow effective development operations where impacts could be avoided or mitigated. As part of the "no lease" prescription in Area 3, existing leases that expired before they were developed or were held by production would not be reoffered for lease, further protecting vegetative resources.

Management prescriptions for special status plant species and unique plant communities and possible use of COAs on leases without protection for these species would reduce adverse impacts; however, overall significant adverse effects could occur if development without protective COAs (due to economic effects on developers) could continue in these areas.

Construction of wells or access roads in stabilized dunes would cause direct loss of anchoring vegetation, creating active dunes that might not stabilize with natural vegetation within the planning period (20 years). One such stabilized dune community, the basin big sagebrush/lemon scurfpea association, is not known to exist elsewhere in the country to the quantity and extent that it does in the planning area. Any disturbance of this plant community would likely result in the long-term loss of this unique vegetation type for the life of this plan and would therefore produce a significant impact.

A portion of the planning area would be withdrawn from locatable mineral exploration and development (Map 53), and mineral material sales (Map 58). Approximately half of the known unique plant communities of basin big sagebrush/lemon scurfpea would be protected from locatable mineral activity through the withdrawal of the western portion of the Greater Sand Dunes ACEC. The larger aspen communities would also be protected by the withdrawal of South Pass Summit and the northern elk birthing areas. The basin big sagebrush/lemon scurfpea community would also be closed to mineral material sales through the closure of the Greater Sand Dunes ACEC, the Steamboat Mountain ACEC, and the Sand Dunes WSA. Parts of the aspen communities would also be closed to mineral material sales through the closure of South Pass Summit. Special status plant species would be withdrawn from mineral location and closed to mineral material sales. Subjecting areas to mineral activity could result in direct removal of shrubs and trees, causing adverse long-term effects on these communities through conversion to grassland and nonwoodland-type areas.

The majority of the basin big sagebrush/lemon scurfpea and other mountain shrub communities would be open to coal exploration and development, which could cause adverse long-term effects because of direct removal of these communities and lengthy reclamation periods. However, it would be unlikely that any development would take place during the planning period because of projected demand.

Noxious weeds and other invasive species are expected to increase under this alternative as a result of surface disturbing activities. Weeds have direct adverse impacts on native vegetation and, once established, are extremely costly and time consuming to control, and even harder to eradicate. Vehicles, horses, wildlife, livestock, campers and hikers, and just about any other mobile conveyance would spread weed seeds from their source into disturbed areas. Most adverse impacts due to noxious weeds are expected to occur adjacent to roads because they convey high levels of traffic to and from the planning area.

Although vegetation would be affected by surface disturbing activities within the planning area, specific mitigation measures would be implemented to protect certain species. The two federally listed plant species potentially occurring within the planning area, Ute ladies'-tresses and blowout penstemon, would not likely be adversely affected. Required surveys for threatened and endangered species before surface disturbing activities and subsequent protective measures developed by BLM in conjunction with USFWS would help mitigate potential impacts. Searches for special status species would be required in potential habitats for those species before approval of any project or activity in those areas. Known locations of these communities would be protected and closed to or withdrawn from OHV use, locatable mineral development, mineral material sales, and coal and sodium exploration. BLM Wyoming sensitive plant species would also be avoidance areas for ROWs. A portion of the habitat would be closed to surface disturbance and disruptive activities through either a closed-to-leasing or an NSO designation.

The management actions established for special management areas would generally benefit vegetation resources. The expansion of Steamboat Mountain ACEC to include a portion of the basin big sagebrush/lemon scurfpea plant community would provide protection of this unique community through limitations on mineral development and other surface disturbing activities. The addition of the West Sand Dunes Archaeological District would also likely reduce adverse effects on vegetation through management prescriptions limiting surface disturbing and disruptive activities within special management areas.

4.4.6 Potential Impacts on Wildlife

Wildlife includes all terrestrial, avian, and aquatic animals and their habitats. Resources include species that are protected under the ESA, identified as Wyoming BLM sensitive species, and state species of concern. Impacts on resources and resource users resulting from implementation of the wildlife management actions are discussed in those particular resource sections. This section describes potential impacts on wildlife resulting from the implementation of management actions for other resource management categories.

Impacts on wildlife would be considered significant if the viability of a federally protected species were jeopardized or if actions would result in the need to list a species under the ESA. A lesser impact would result if the disturbed population could be reestablished to its original state and condition or if the population were sufficiently large or resilient to respond to disturbance without a measurable change. The significance of an impact also would depend on the importance of the resource and the proportion of the resource that would be affected relative to its occurrence in the vicinity. An increase in population numbers in response to an enhanced habitat or the increased viability of a species would be viewed as beneficial impacts. Impacts on wildlife would also be considered significant if BLM sensitive species or native wildlife species considered as vital, high, or moderate by the WGFD Mitigation Policy showed increased mortality or decreased survival rates. The WGFD Mitigation Policy also classifies habitats as vital or high. Any loss of habitat function or habitat value in these vital, high, or BLM sensitive species habitats would also indicate significant impacts on wildlife. Long-term displacement of elk, mule deer, or pronghorn antelope from crucial habitat or parturition areas within the planning area would be considered significant.

For analysis purposes, it is assumed that the WGFD herd management objective for the Steamboat elk herd unit would remain at 500 under the No Action Alternative and would increase to the current objective of 1,200 under Alternatives 1, 2, 3, and the Proposed JMH CAP. It is also assumed that sufficient habitat exists to maintain WGFD big game objectives.

It is assumed that a portion of key habitats within the planning area would have year-round activity and that the level of activity within the planning area would increase and additional activity would occur within portions of these key habitats. Some wildlife adaptation to activities would occur within the planning area; however, this would not outweigh the effects of disturbance due to the lack of topographic escape and cover for elk and mule deer. It is also assumed that as development and recreational activities increased throughout the planning area, increased fragmentation of habitats would occur. Disruptive activities in key habitats are assumed to cause displacement of wildlife.

It is assumed that elk and mule deer compete for parturition and crucial winter range habitat use.

It is assumed that greater sage-grouse populations would continue to decline in the planning area under the No Action Alternative and Alternatives 1 and 3 and that greater sage-grouse population declines in the planning area would slow under Alternative 2 and the Proposed JMH CAP because of maintenance and/or improvement of habitat. It is also assumed that only 50 percent of the greater sage-grouse nesting habitat identified is expected to be suitable for nesting and that only sagebrush vegetation within the greater-sage grouse winter range is expected to be suitable for winter habitat.

Actions implemented to improve watershed quality are assumed to directly improve wildlife habitat in riparian areas. It is assumed that any actions resulting in substantial disturbances to the soils or changes in vegetative cover would have an adverse effect on watershed health and water quality and would therefore have an adverse effect on associated fisheries.

It is also assumed that the majority of oil and gas leases contain stipulations for a minimum of seasonal protection in sensitive wildlife habitats and that new oil and gas leases would have stipulations for protection of threatened and endangered and Wyoming BLM sensitive species.

It is assumed that each water development within the Colorado or the Platte River Basin in the planning area causes a depletion to the respective systems because all water used for livestock pits, ponds, and water wells and/or water used for drilling and completion of wells within the Green River and the Sweetwater River Basins contributes to the surface flows of the Colorado River or Platte River or their tributaries. Livestock water development depletion calculations under each alternative are based on the following assumptions: (1) all developments are installed in year one of the 20-year planning period; (2) ponds average one-quarter acre in surface area; (3) the evaporation rate from surface water equals the summertime peak rate of one-quarter inch per day; (4) water would remain in the pond for 48 days.

4.4.6.1 Common to All Alternatives

Two types of adverse impacts on wildlife are common to all alternatives: displacement and habitat fragmentation. However, these two adverse impacts vary in degree by alternative. Displacement from surface disturbing or disruptive activities moves animals into less desirable habitat and creates competition for available resources with other species and uses. Wildlife displacement can be either direct or indirect, depending on the amount and type of activity.

The amount of land used for road surfaces, well pads, stock tanks, and any recreation facilities represents a direct loss of wildlife habitat. The actual effect from surface disturbing and disruptive activities in desert areas void of tall stands of vegetation or dramatic topographic relief is greater than the direct loss of acreage indicates. Wildlife habitat loss results from road construction and road use, facility construction and placement, pipeline construction, field facility maintenance, ROW construction, range improvement construction, and disturbance zones around these areas. All disturbed acreages would not be fully reclaimed to their predisturbance structure and density, and portions, particularly in shrub communities and stabilized sand dunes, would remain unavailable as habitat for wildlife for more than 20 years. The basin big sagebrush/lemon scurfpea community habitat would likely take up to 70 years to reach the structure and density of predisturbance conditions. Limited rainfall, poor soils, and severe winter conditions make reclamation difficult, increasing the time required to reestablish suitable vegetation to predisturbance composition and density.

Activities in desert-type terrain tend to displace wildlife, particularly big game species by distances of more than 3 miles because of extended sight distances and lack of security cover. The loss of adjacent habitats because of disturbance or habitat degradation is much more subtle but has been observed and documented.

Elk have been shown to avoid disturbance by distances of upwards of 1.25 miles from active oil and gas wells (Gussey 1986; Powell 2003; WGFD 2000), upwards of 2.4 miles from construction of drill sites (Hayden-Wing Associates 1990), and upwards of 1.25 miles from major roads (Powell 2003). Disturbance was also avoided or reduced by topographic visual barriers between the source of disturbance and the elk (Irwin and Gillin 1984; Ward 1986; Olson 1981; Kuck et al. 1985; Van Dyke and Klein 1996). This disturbance is usually temporary in nature, however, and some studies have shown that elk returned to the area of disturbance once the source of disturbance and human presence was gone (Gussey 1986; WGFD 2000), albeit at 50 percent of previous levels in forested environments (Hayden-Wing Associates 1990). Studies particular to oil and gas activities have shown that elk tolerate some level of operating wells and associated facilities as long as human presence is absent or cover is available in the vicinity of the well site (Gusey 1986; Beak Consultants 1979; Bennington et al. 1982; Hayden-Wing Associates 1990).

Van Dyke and Klein (1996) found that elk showed no shift in home range between the pre and post drilling of a single oil well with all roads closed to other traffic and remote monitoring during sensitive periods (winter and parturition). However, they shifted their use of core areas out of view of the drill pad during both periods, there was increased intensity of use in core areas after drilling, and there was a slightly reduced use of total home range. Van Dyke and Klein concluded that if drilling occupied a relatively small amount of home range, elk were able to compensate by shifting areas of use.

Kuck et al. (1985) showed that persistent disturbance weakened the tendency of elk to return to the disturbed area and that selection of lesser quality habitat occurred. However, abandonment of the traditional calf-rearing habitat did not result in abandonment of calves or a difference in survival rates between disturbed and control groups. The study also found that there were no data to suggest that elk habituated to mining noises. Johnson and Wollrab (1987) found that elk distribution changed during gas exploration and field development through the abandonment of winter and calving habitat and changes in range. They discovered that although elk returned to disturbed sites, populations were lower (sometimes less than half), and the use of the habitat was unpredictable.

When studying elk response to roads, Lyon and Ward (1982) found that elk (in a forested environment) moved from 0.24 to 1.8 miles, depending on the amount and type of traffic, road quality, and adjacent cover density. Generally, road avoidance has been reported to be greater in areas of open vegetation with less adjacent cover (Perry and Overly 1976; Lyon 1979), in shrub lands rather than in pine forests and juniper woodlands (Rost and Bailey 1979), and in areas with increased density of high-quality roads (Hershey and Leege 1976).

A JMH Desert Elk Study was initiated in 1999 to better understand the effects of human disturbance on elk behavior and habitat use within the planning area. The findings of this study are outlined in Section 3.1.6.1.3 and include the following: Elk typically avoided habitats offering little security cover; topography and screening cover by vegetation are important during daylight hours for providing security cover; habitat use patterns within the planning area are strongly influenced by roads, which cause habitat loss much greater than the actual road "footprint"; human disturbance leads to increased daily movements of disturbed elk and reduced elk use in traditional calving areas (Powell 2003).

Significantly fewer studies have been conducted on the effects of human disturbance, particularly from roads and/or oil and gas development, on mule deer and pronghorn antelope. Because of this, possible effects on these species are not well understood. Rost and Bailey (1979) found that mule deer avoid roads by up to 200 meters (0.12 miles) and that road avoidance was greater where roads were more traveled and in shrub versus forested habitats. There are no known published studies on pronghorn antelopes' reactions to roads; however, it has been documented that woven wire ROW fences along roads impede or block antelope movement, resulting in fragmentation of habitat (Deblinger 1988; Bruns 1977) and pronghorn deaths due to reduction or elimination of access to severe winter relief range.

Hiatt and Baker (1981) examined the effects of a single well installation on winter distributions of elk and mule deer. They found that both species avoided the drilling site during drilling but did not avoid the access road. They also examined vegetation present at the well location and concluded that shifts in usage were not the result of differences in vegetation. Easterly et al. (1991) examined winter distribution of and habitat use by pronghorn and mule deer within a petroleum production complex and found that pronghorn used four of six oil fields in proportion to their availability and that mule deer used five of six oil fields in proportion with their availability. Two of the most active oil fields were used less than expected by pronghorn given their availability, and no mule deer were observed within one of the most active oil fields. Easterly et al. concluded that there was continued use of winter range by pronghorn and mule deer after construction of an oil and gas field.

It is generally agreed that once disturbance reaches a certain threshold, impacts become significant. Further study and monitoring are needed to determine the threshold for the planning area.

Habitat fragmentation occurs when a contiguous habitat is broken up (fragmented) by disturbing activities, causing a reduction in usable ranges and the isolation of smaller, less mobile species; a loss of genetic integrity within species or populations; and an increase in the abundance of habitat generalists that are characteristic of disturbed environments (i.e., competitors, predators, and parasites) (Harris 1998). The primary factor affecting wildlife species (especially big game) within the planning area is the reduction in usable habitat and the disruption of migration corridors that link crucial habitat (winter range) and parturition areas. This would occur particularly in areas with many access roads and surface disturbances. Transportation routes tend to fragment habitats and can act as barriers to some species, especially in severe winter conditions. This could also increase public access to areas that previously had been relatively inaccessible to vehicles during the winter and spring. This would become more important and would increase adverse effects on wildlife as demands for use of public lands increased. Migration routes could be altered or eliminated, changing some traditional use patterns on a local level. Seclusion areas for wildlife would become smaller and more dispersed in some areas. Increased oil and gas activity, especially in areas with reduced well spacing (40- and 80-acre spacing), would preclude use of some of these areas by wildlife species, especially deer and elk. Existing leases within the planning area might not provide the specific mitigation measures needed to protect important wildlife habitats. In specific cases in which stipulations would not be adequate to protect habitat, COAs for APDs could be applied. These would be based on site-specific analysis and would establish specific necessary mitigation measures not covered by stipulations for resource and environmental protection. BLM specialists would review sensitive resources with lease operators to develop and implement protection measures to allow for effective development operations where impacts could be avoided or mitigated. Depending on the economics of the industry at the time, it is possible that developers could claim an economic hardship and therefore not have to implement recommended mitigation measures. Greater sage-grouse populations have been declining over the last half of the century due to such factors as habitat degradation, fragmentation, and loss (see Chapter 3). As oil and gas development has increased in Wyoming, so has the concern over how this type of development might affect greater sage-grouse populations. Potential impacts of fluid mineral development on greater sage-grouse populations include direct habitat loss from well, road, pipeline, and transmission line construction; increased human activity and associated pumping noise causing displacement; increased legal and illegal harvest; and direct mortality associated with evaporation ponds and increased exposure to predation (Braun 1986; TRC Mariah Associates Inc. 1997).

A study of greater sage-grouse of the Pinedale Mesa near Pinedale, Wyoming, was conducted by Lyon in May 2002 to examine the effects of natural gas and oil development on the productivity, general movements, and habitat use of greater sage-grouse. The results of the study indicated that hens captured on disturbed leks demonstrated lower nest initiation rates; traveled twice as far to nest sites; and selected, for height, greater total shrub canopy cover and live sagebrush canopy cover than did hens captured from undisturbed leks. Lyons concluded that extreme early brood survival appears to be the limiting factor in greater sage-grouse population stability on the Pinedale Mesa and suggested that disturbances (i.e., noise and predation) associated with well drilling and road traffic during breeding might result in reduced nest initiation rates and could be causing lower brood survival.

Other studies conducted on greater sage-grouse indicate that noise might be adversely affecting strutting and nesting grouse; however, the degree of impact is unknown at this time (LaGory et al. 2001; Dantzker et al. 1999).

As documented in Chapter 3, greater sage-grouse nesting and wintering habitat requirements are quite specific. If this habitat were disturbed, it could require in excess of 20 years to restore affected habitat to predisturbance conditions. During this time, however, opportunities might exist to enhance remaining vegetation and habitat characteristics to provide more suitable habitat than currently exists. If that could not be accomplished, there would be a net loss of habitat function and adverse impacts on greater sage-grouse habitat during the planning period.

The health of fisheries within the planning area is directly related to the overall health and functional capabilities of riparian resources, which in turn are a reflection of watershed health. Any activities that affected the ecological condition of the watershed and its vegetative cover would directly affect the aquatic environment. It is assumed that any substantial disturbance to the soils or changes in vegetative cover would have an adverse effect on watershed health and water quality and would therefore have an adverse effect on associated fisheries. The degree of impact attributed to any one disturbance or series of disturbances would be influenced by location within the watershed, time and degree of disturbance, existing vegetation, and precipitation. Surface disturbances result in accelerated erosion and runoff, increasing stream flow and sediment and nutrient loads to local channels. Sedimentation of a given channel can impact fisheries by reducing habitat complexity, which results in a lower diversity of prey organisms. Increased turbidity also results from increased sediment input, which decreases light penetration and inhibits visual predation by fish. Surface disturbance near streams that results in substantial removal of riparian vegetation can increase current velocity, which puts additional strain on fish and reduces nutrient cycling. In addition to increased sediment input, streambank disturbance can impact fisheries by creating bank instability, which can alter flow and destroy pool-riffle formations necessary for fish survival. Increased nutrient loading of streams can impact fisheries by increasing primary production above natural levels, which degrades habitat and decreases oxygen levels. Because any impact on natural water resources is also an impact on fisheries, impacts to fisheries can be inferred from Section 4.4.2, which discusses impacts on riparian areas and water quality.

Oil and natural gas production could result in the use of pits to separate oil from produced water or to evaporate large volumes of water with high levels of total dissolved solids (TDS). Birds are attracted to these pits because they mistake them for natural bodies of water. The sticky oil then entraps the birds in the pits and they die from exposure and exhaustion. Birds that do manage to escape can die from starvation or experience impaired reproduction caused by the toxic effects of oil ingested during preening. Scavengers and predators can also suffer adverse effects from consuming oiled birds. Pits or ponds containing hypersaline water can pose a mortality threat to migratory birds through ingestion of toxic brine, susceptibility to avian botulism, and sodium crystallization on feathers, which destroys thermoregulatory and buoyancy functions. A study of bird mortality in oil pits in Wyoming conducted by Brent J. Esmoil for the University of Wyoming demonstrated that deterrents such as flagging, strobe lights, metal reflectors, and noisemakers were not effective at preventing bird mortalities in these pits. Esmoil did not find any mortality in pits completely covered by netting or by wire mesh sufficiently small enough to prevent songbirds from falling through the wire (USFWS 2003). It is BLM standard practice that pits containing harmful fluids be maintained in a manner that prevents migratory bird mortality, thus eliminating potential effects.

There is a potential for additional strain on forage resources within portions of the planning area (south-central) from concentrations of grazing animals. Heavy concentrations of grazing animals could result in overutilization of vegetation. However, monitoring and evaluation of habitat to comply with the Wyoming Standards for Healthy Rangelands should provide information on vegetation resources before impacts became significant.

The management of heritage sites would indirectly benefit wildlife through preservation of potential habitat and general habitat characteristics. Disturbance and removal of vegetation could occur through activities related to management of heritage resources; however, any impact would generally be limited to relatively small areas. Even under the most intense management (i.e., excavation), the amount of habitat disturbed would be very small, but this still could have significant impacts on small animals (e.g., pygmy rabbits, a BLM sensitive species) occupying those areas.

Watershed management would provide benefits to wildlife by maintaining or restoring habitat conditions through the establishment of DPC objectives, placement of buffer zones around riparian areas, and restrictions on surface disturbance within riparian areas and floodplains. Actions that would maintain or improve watershed conditions would generally benefit the ecological condition of wildlife habitat.

The management protections afforded to special management areas would generally result in beneficial impacts on wildlife. Protections aimed at conserving vegetation, and limitations on surface disturbing activities, would benefit wildlife by enhancing overall habitat conditions.

4.4.6.2 No Action Alternative

Prescribed fire as a vegetation treatment in the planning area could benefit many wildlife habitats because it aids in regeneration of some tree and shrub species and allows for additional wildlife forage. Adverse effects of prescribed fire on wildlife habitat include forage overutilization by big game species after treatment of aspen stands. Conversions of shrubs to grassland using prescribed fire also would result in a direct loss of cover and food for many species (such as small mammals, greater sage-grouse, and big game). The effects of loss of cover could be long-term, particularly since sagebrush can take more than 20 years to reach the appropriate canopy cover height and spacing needed for some sagebrush-dependent species. Greater sage-grouse are particularly susceptible to loss of cover from fire activities because of the relationship between their breeding, brood-rearing, and wintering habitat and sagebrush. Significant long-term adverse impacts on greater sage-grouse habitat could occur if large acreages were burned. No prescribed fires would be allowed within the basin big sagebrush/lemon scurfpea vegetation association under this alternative; therefore, effects on wildlife dependent on this association would not occur.

Watershed management would provide benefits to wildlife by maintaining or restoring habitat conditions through the establishment of DPC objectives, placement of buffer zones around riparian areas, and restrictions on surface disturbance within riparian areas and floodplains. Actions that would maintain or improve watershed conditions would generally benefit the ecological condition of wildlife habitat.

Wild horses currently occur in the planning area outside the identified HMAs, which will continue despite gathering efforts. This compounds problems associated with limited water sources and big game crucial habitat (winter range). Wild horses concentrate in the core area during the summer months and compete with big game for available forage during winter months (November through March). With livestock competition for available water and forage added to wild horse competition, adverse impacts on big game would be expected. All water developments within sensitive wildlife habitats would be in conformance with wildlife objectives. Adverse impacts in the planning area due to wild horses would also be minimal provided that the numbers of horses were kept at plan objective levels and that the herd was maintained within the HMA.

The effects of livestock grazing on wildlife would be minimal because actions undertaken to improve rangeland and riparian habitat (livestock water developments, exclosures, fencing, and conversions) must meet the Wyoming Standards for Healthy Rangelands (Appendix 10). Forage utilization levels would be evaluated on a case-by-case basis and would consider habitat conditions and forage for livestock, wildlife, and wild horses. Water developments could benefit wildlife by providing additional sources of water but could also adversely impact wildlife habitat, particularly in sensitive habitats, through possible reductions in forage and cover due to increased distribution of animals. However, implementation of the Wyoming Standards for Healthy Rangelands would ensure that impacts were not significant. Adverse impacts of fences on wildlife within the planning area would be minimal because of requirements that they be located so as not to impede wildlife movement and that they be removed, modified, or reconstructed where documented conflicts with wildlife occurred. Future livestock conversions (sheep to cattle or vice versa) would be carefully analyzed. Sustainability reviews would be required before conversions, which would benefit range.

It is estimated that 23 livestock pits, ponds, and water wells might be created or rebuilt in the planning area. Each one of these water developments would be assumed to cause a depletion to the Colorado and Platte River systems. Water depletions are important because the water from portions of the planning area is part of the habitat for endangered fish, wildlife, and/or plant species downstream from the project area in the Colorado and Platte River systems. It is assumed for analysis purposes that all water used for livestock pits, ponds, and water wells within the Green River and Sweetwater River Basins would have contributed to the surface flows of the Colorado or Platte Rivers or their tributaries. In addition, of the 23 water developments to be constructed, 19 would be in the Green River Basin (Colorado River) and 4 would be in the Sweetwater River Basin (Platte River). Using 5 acre-feet per water development over the 20-year planning period, average annual depletions anticipated by these actions would not exceed 4.75 acre-feet for the Colorado River system and 1 acre-foot for the Platte River system after all developments were installed.

Protection of special status plant species would benefit wildlife habitat through restrictions on surface disturbing and disruptive activities. Reduction of invasive species, achieved by requiring provisions to reduce and control such species, would also benefit wildlife by maintaining the quality of habitat.

OHV use is expected to increase because of improvements in the facilities near the Greater Sand Dunes Recreation Area, increased interest in the planning area, and increased access due to development activities. Estimated recreation activity is discussed in detail in Section 4.7. The majority of OHV use would occur within the Greater Sand Dunes Recreation Area; however, activity is also expected throughout the planning area. No significant impacts on wildlife (specifically, elk, mule deer, antelope, greater sage-grouse, and raptors) are expected from OHV use because of the ability to place seasonal restrictions on OHV users (Map 9) at crucial times in sensitive habitats; seasonal closure of Steamboat Mountain; limitation of access to designated roads and trails in the Steamboat Mountain ACEC; and the fact that the majority of OHV use in the planning area would occur in the summer and fall (June through October), a time when wildlife would be the least sensitive to human disturbance. However, OHVs would have localized adverse impacts on wildlife through disturbance caused by human presence, a small amount of surface disturbance, and noise. Additional areas of seasonal restrictions could be implemented as needed to reduce adverse impacts. Geophysical exploration activities could have similar effects. However, effects would be reduced by implementing seasonal restrictions and by conforming to OHV designations.

Recreation activities (camping, hiking/biking, recreational mining) in the planning area would be expected to increase steadily throughout the planning period. Impacts on wildlife from recreation activities would have localized adverse impacts on wildlife through disturbance caused by human presence, and a small amount of surface disturbance. It is unknown whether these impacts would be short or long term.

Hunting activity in the planning area has been shown to have short-term adverse effects on big game, and most likely all wildlife, in the planning area because of an increase in human activities and disturbance (Powell 2003). Hunting is expected to remain constant under this alternative; therefore, the level of short-term disturbance from increased human activity would remain the same.

Wildlife could experience adverse impacts from development in the form of surface disturbance. Greater sage-grouse leks, wetlands, riparian areas, and floodplains are within the controlled surface use category; this limits most surface disturbing activities within one-quarter mile of a lek and within 500 feet of wetlands, riparian areas, or floodplains (Map 7). Raptor nesting sites are within the NSO category, which limits all surface disturbance to that site and limits permanent or high-profile structures within a specified distance. Seasonal limitations for reduction of disturbance are applied within one-half mile to 1 mile of the nesting site, depending on the species of raptor. Such limitations are also applied within greater sage-grouse winter concentration areas, within 2 miles of greater sage-grouse leks, and within big game crucial habitat and parturition areas. These restrictions would reduce adverse impacts on these species during important times of their life cycle; however, they would not prevent further habitat destruction from occurring, which might result in the selection of suboptimal habitats. It is assumed that greater sage-grouse populations would continue to decline under this alternative because the management of their habitat would be insufficient for recovery or stabilization of populations in the planning area. It is unknown whether the continued population decline of greater sage-grouse in the JMH CAP planning area would lead to a need to list the species and, therefore, result in a significant impact. ROWs (such as pipelines and power lines) could adversely affect wildlife habitat because of the disturbance of associated roads, increased access, and associated displacement caused by human presence. Many of these alterations of habitat favor predators, thereby increasing predation of species such as the greater sage-grouse. Although companies might not need to travel pipeline routes, removal or crushing of vegetation would allow increased access for recreationists, causing further intrusion into wildlife habitat and increased disturbance. Currently, numerous two-track-type roads access almost all parts of the planning area, although they are used primarily seasonally during hunting (Powell 2003). Aboveground pipelines would have less adverse impact on crucial wildlife habitats (big sagebrush, mountain shrubs, woodland habitats, stabilized sand dunes); however, they would pose a threat to public safety, primarily to OHV users. ROW impacts on greater sage-grouse leks and other sensitive wildlife habitat in the South Pass, Greater Sand Dunes, and Steamboat Mountain ACECs would be reduced because of these areas' designation as avoidance areas (Map 8). All other wildlife habitats would be subject to ROW designation and associated impacts. Adequate mitigation (barriers, culverts, revegetation, etc.) would be implemented to reduce impacts.

Communication sites and related access, when located in sensitive habitat, would have significant impacts on species occupying those habitats. Access to these sites occurs year-round. Year-round access could result in plowing of roads that would displace wintering wildlife, which would add to the stress caused by winter conditions and would disrupt parturition and nesting. Plowing of these roads would also allow more recreational traffic to use these areas during times when they previously would not have been accessible. The Steamboat Mountain ACEC would be closed to communication sites, which would minimize adverse impacts on sensitive habitats in that area.

New road development increases use by recreationists and other public land users, increasing the amount of human presence and the potential for harassment and illegal taking of wildlife in the area. Very limited activity currently occurs in the area from November to June because of the lack of access and lack of snow removal. Closing roads during crucial winter periods would help limit disturbance to wildlife and retain a limited level of activity.

Closing the core area to leasing of fluid minerals would protect approximately half of the most sensitive habitat of wildlife species, particularly big game (elk and mule deer), that inhabit the planning area (Map 51). The other half of the core area consists of existing leases that would be reinstated, allowing fluid mineral leaseholders to drill (see Common to All Alternatives section above for existing lease discussion). Leases outside the core area would also be reinstated, and new leases would be offered in the remainder of the planning area subject to stipulations such as surface disturbance limitations, timing and access restrictions, protection of special resources, and NSO designations.

Approximately 221 oil and gas wells (exploration, discovery, production) would be drilled over the planning period: 19 wells per year for the first 4 years, with drilling steadily decreasing through the rest of the planning period to 8 wells per year as producing wells played out. All drilling could occur throughout the planning area, except in nonleased portions of the core area and WSAs; however, it is likely that drilling would occur mostly on existing leases for the first few years of development. The phase of fluid mineral activity most disturbing to wildlife is drilling because of the large amount of human disturbance from the creation of access roads, surface disturbance from the well pads (approximately 3 acres), noise from the rig during drilling, and overall human presence. This phase of activity lasts approximately 1 to 4 months per well depending on the depth of the well. All wells not put into production would be reclaimed through implementation of a reclamation plan. Production wells that played out after an estimated 30 years would also be reclaimed. However, full restoration of some habitats would not occur for more than 20 years (as described in Section 4.4.6.1).

Big game would experience adverse effects from fluid mineral development, resulting in possible avoidance (up to 1.25 miles) of areas disturbed by drilling, including roads. Possible disruption of migratory corridors could also occur. The level of adverse effects, however, would depend on where the activity occurred within the planning area. Existing leases within the planning area are spread throughout the majority of the area. If development of 19 wells per year for the first 4 years of development were dispersed throughout the planning area, adverse effects on big game could be minimal if suitable, sufficiently large alternative habitats existed. If development were concentrated within the high development potential area, which includes the core area, adverse effects on big game would be significant because any loss of function or value of habitats considered as vital and high by the WGFD is considered a significant impact. Concentrated development in this area would reduce available habitat and would likely disrupt migratory corridors. As development declined throughout the planning period after the first 4 years, adverse effects on big game would slowly be reduced and gradual replacement of habitat from restoration activities would occur.

Mountain plover and greater sage-grouse could also experience adverse impacts from fluid mineral development because of the creation of perches for raptors that prey on each species. Minimization measures for these impacts could include adding pointed conical covers on smoke stacks and plugged well markers; burying power lines; using the lowest possible structures for fences, condensate storage, and other elevated structures; and incorporating perch inhibitors into these structures' design.

It is estimated that two coalbed gas exploration projects, with a total of 50 wells, would be drilled within the planning area (but outside of the core area) during the planning period. Impacts on wildlife, particularly on big game, are expected to be similar to those for oil and gas wells. Because coalbed gas wells are drilled in a "pod" formation for dewatering purposes, with approximately 25 wells per pod, impacts are expected to be significant (depending on the location of the development and the wildlife species and/or habitats occurring in the area) and localized but might not affect as much acreage as traditional oil and gas well development.

Drilling and completion activities for oil, gas, and coalbed gas wells would use local water sources and would therefore deplete water in portions of the planning area that are part of the habitat for threatened and endangered species downstream from the project area in the Colorado River and Platte River systems. It is assumed for analysis purposes that all water used for drilling and completion of wells within the Green River and Sweetwater River Basins would have contributed to the surface flows of the Colorado or the Platte River or their tributaries. In addition, of the 221 oil and gas wells to be drilled, 95 percent would be in the Green River Basin (Colorado River), and 5 percent in the Sweetwater River Basin (Platte River). All coalbed gas wells (50) would be in the Green River Basin.

Using 1.5 acre-feet of water per well, depletions from these actions would total approximately 390 acre-feet in the Colorado River system and 16.5 acre-feet in the Platte River system. Based on a 20-year time span, the average annual depletion for the two systems would be 19.5 acre-feet and 0.83 acre-feet, respectively. The depletion of water from the Colorado and Platte River systems and its effect on threatened and endangered species downstream are described in the Biological Assessment (Appendix 3) for this document.

Locatable mineral activity on existing active claims in and around northern parturition areas has the potential to decrease the usability of these areas for calving and fawning. This particularly applies to activities that might occur in or near aspen stands associated with deer and elk parturition areas, although some of the aspen stands would be withdrawn as part of the South Pass Summit. These areas are also important to a variety of birds and other wildlife and are rare habitat types in the planning area. Although current exploration activities are seasonal, with little or no activity during the winter, mining activities could continue at the current rate, or even increase during the fawning and calving periods, causing displacement of animals. There is limited information available on the likelihood of other locatable mineral development (such as commercial diamond or gold mining) in the planning area. If exploration activities found there was potential for this development, a plan of operation would have to be filed that specified how mining would be conducted without permanently impacting other resources. Reclamation plans would also have to be developed, and bonds posted to ensure that mined lands were reclaimed.

The planning area would be open for consideration of mineral material sales except in raptor nesting sites, South Pass Summit, WSAs, the Greater Sand Dunes ACEC, and the Steamboat Mountain ACEC (Map 12). Closing these areas to mineral material sales would benefit a portion of wildlife habitat; however, a large portion of crucial habitat (winter range) and parturition areas for big game are outside these areas. These provisions also would not protect greater sage-grouse nesting habitat. This activity is therefore likely to cause localized adverse impacts on wildlife through the disturbance of habitat. Reclamation would occur, but full restoration of some habitats would not occur for more than 20 years (Section 4.4.6.1).

Coal and sodium exploration would be allowed within the planning area on a case-by-case basis (with mitigation for protection of sensitive resources) except in wetlands, riparian areas, floodplains, raptor nesting sites, the Steamboat Mountain ACEC, and within one-quarter mile of greater sage-grouse leks (Map 11). Effects of this exploration on wildlife habitat are expected to be minimal because of the small amount of surface disturbance associated with exploration and because of the mitigation included in proposals, which could include seasonal limitations, restricted access to existing roads and trails, and full reclamation.

Only federal coal lands within the Coal and Sodium Occurrence and Development Potential Area would be open to consideration of leasing (Map 6). Overall, this would reduce adverse effects on wildlife habitat from coal leasing. In addition, a portion of the Greater Sand Dunes ACEC would be closed to leasing within this area. Raptor nesting sites (with a one-half- to 1-mile buffer) and the Steamboat Mountain ACEC would be open to coal leasing with subsurface mining and controls on surface facilities, further minimizing adverse impacts on wildlife. Additional measures would be implemented for maintenance of adequate big game habitat. Overall, coal leasing is expected to have negligible impacts on wildlife because the projected demand for developing this resource in the planning area is minimal.

The federally listed black-footed ferret may occur within the planning area and could be affected by management actions, but would likely not be adversely affected. The species could be affected because of the amount of surface disturbance and human activity associated with management of the planning area. However, no adverse effects are expected to occur, because of required surveys for these species before any surface disturbance activities and subsequent protection measures developed by BLM in conjunction with FWS should a ferret be found. There are no expected effects on the bald eagle, gray wolf, grizzly bear, or the western population of the yellow-billed cuckoo from management of the planning area, because of a lack of suitable habitat or their occurrence as a casual migrant.

Potential effects on the Wyoming BLM sensitive species mountain plover and greater sage-grouse are discussed above. It is unknown whether adverse impacts on other Wyoming BLM sensitive species would occur because of a lack of information on habitat locations and requirements within the planning area. Searches for these species would be required in any potential habitats for the species before approval of any project or activity in those areas. If any of these species were found, mitigation measures would be species-specific and determined on a case-by-case basis.

4.4.6.3 Alternative 1

Effects of prescribed fire (vegetation treatment) would be the same as those under the No Action Alternative, except that use would be decided on a case-by-case basis, which could cause greater or lesser effects than those described for the No Action Alternative. Impacts of wild horses on wildlife habitat would be the same as those under the No Action Alternative.

Effects of watershed management actions would be the same as those under the No Action Alternative, except that these beneficial impacts would be greatly reduced under this alternative because there would be fewer restrictions on surface disturbing activities and smaller buffer zones around riparian areas and floodplains.

The anticipated use of livestock AUMs would increase over the planning period to the full permitted active use amount, which is approximately double the historic use. This would increase grazing pressure on forage resources, potentially having an adverse impact if the long-term productivity of the range were compromised. This additional impact would be realized only on allotments that were not currently close to fully utilizing their permitted AUMs. Other impacts of livestock grazing on wildlife habitat under this alternative would be similar to those under the No Action Alternative, except that fences would only be modified or reconstructed (not removed) where documented wildlife conflicts with fencing occurred. Existing exclosures could be removed and made available for livestock grazing. New exclosures would not be considered unless they benefited commodity uses. This has the potential to adversely affect wildlife through potential loss of habitat from overgrazing of particular areas. Effects on the habitat of endangered fish, wildlife, and/or plant species in the Colorado and Platte River systems from water depletions resulting from construction of livestock water developments would be the same as those under the No Action Alternative.

Designating special status plant species communities (primarily Wyoming BLM sensitive species) as avoidance areas rather than exclusion areas could reduce the benefit of protection of wildlife habitat described under the No Action Alternative. The effects of reduction of invasive species on wildlife habitat would be the same as under those the No Action Alternative.

OHV use is expected to increase because of increased interest in the planning area and increased access due to development activities; however, use would be slightly less than under the No Action Alternative (Section 4.7, Recreation Resources). The majority of OHV use would occur within the Greater Sand Dunes Recreation Area; however, activity is also expected throughout the planning area. Although OHV use is expected to be less than under the No Action Alternative, adverse effects on wildlife habitat are expected to be greater because of a lack of seasonal restrictions on the majority of habitats (big game, greater sage-grouse winter range). Although raptors still would have seasonal restrictions associated with nesting sites, the seasonal buffer around the site would be reduced to one-quarter mile instead of the one-half to 1 mile discussed in the No Action Alternative. Mountain plover would be afforded increased protection under this alternative compared with the No Action Alternative because of seasonal limitations on mountain plover aggregation areas. Greater sage-grouse seasonal protection would be reduced to potential nesting habitat within 1 mile of leks, increasing possible disturbance to nesting activities from OHV use.

Hunting activity is expected to be greater than under the No Action Alternative over the planning period because of increased development and resulting animal dispersion. Adverse effects on wildlife would be short term, as described in the No Action Alternative.

The overall adverse effects of surface disturbing activities on wildlife habitat would be much greater than under the No Action Alternative because of a lack of seasonal restrictions on sensitive wildlife habitat except for greater sage-grouse nesting habitat buffers (1 mile), raptor nest sites buffers (one-quarter mile), and mountain plover aggregation areas (Map 16). Depending on the location and timing of activities, it is likely that lack of seasonal restrictions on big game habitat would cause long-term displacement from crucial habitat and parturition areas, resulting in a potentially significant effect. It is assumed that greater sage-grouse populations would continue to decline under this alternative because the management of their habitat would be insufficient for recovery or stabilization of populations in the planning area. Because the greater sage-grouse is a BLM sensitive species, any loss of habitat function or value constitutes a significant impact. Also, the birds are classified by the WGFD as “vital,” and any increased mortality or decreased survival would be considered a significant impact. This alternative would result in significant impacts on the birds.

Effects of ROWs on wildlife habitat would be greater under this alternative than under the No Action Alternative because of the removal of Steamboat Mountain ACEC as a ROW avoidance area (Map 18). The only protection given to wildlife from ROWs would be the designation of greater sage-grouse leks with one-quarter-mile buffers as ROW avoidance areas. All other wildlife habitat would be open to ROWs. A lack of transportation planning under this alternative would also increase adverse effects on wildlife habitat, particularly big game, because of lack of control over access at all times of the year. This would result in significant impacts on greater sage-grouse, elk, and mule deer.

Geophysical exploration and detonation, and coal and sodium exploration activities (Map 21), under this alternative could have significant adverse effects on wildlife habitat, except in WSAs, because of a lack of seasonal restrictions protecting big game crucial habitat (winter range) and parturition areas. Powell’s study showed very limited use of the WSAs by elk except as hiding cover during the hunting season.

Effects could include displacement due to the noise associated with disruptive activities, surface disturbance, possible abandonment of habitat during parturition periods, and additional stress on big game populations during winter periods.

Effects of communication sites would be the same as those described under the No Action Alternative; however, the Steamboat Mountain ACEC would be open to consideration for communication sites, which would increase adverse effects on wildlife habitat. Such activity could cause elk and mule deer to abandon the majority of their crucial winter range and parturition habitat, therefore resulting in significant impacts.

The entire planning area, except WSAs, would be open to fluid mineral leasing (Map 20). The Hydrocarbon Occurrence and Development Potential Report (Appendix 13) assumes that a total of 264 oil and gas wells would be drilled over the planning period: 21 wells per year for the first 4 years, with drilling steadily decreasing thereafter to 10 wells per year as producing wells played out. Depending on the timing and location of oil and gas development, this expected level of development would have significant impacts on wildlife. Effects under this alternative would be significant because of lack of protection from leasing in the core area and lack of stipulations on new leases that would protect big game and other sensitive wildlife through minimal seasonal limitations.

Mountain plover and greater sage-grouse are expected to experience adverse impacts from fluid mineral development because of the creation of perches for raptors that prey on these species. Mitigation of this effect would include the following measures: constructing pointed conical covers on smoke stacks and plugged well markers; burying power lines or including perch-inhibitors in their design; using the lowest possible structures for fences, condensate storage, and other elevated structures; and incorporating perch inhibitors into such structures' design.

Effects of coalbed gas and locatable mineral development on wildlife habitat would be the same as those described under the No Action Alternative, except that the Greater Sand Dunes ACEC would not be withdrawn from mineral location under this alternative.

Assuming a total of 264 oil and gas wells, with the remaining assumptions being the same as those for the No Action Alternative, water depletions from oil, gas, and coalbed gas wells under this alternative would total approximately 451.5 acre-feet in the Colorado River system and 19.5 acre-feet in the Platte River system. Based on a 20-year time span, the average annual depletion for the Colorado River system and the Platte River system would be 22.5 acre-feet and 0.98 acre-feet, respectively. The depletion of water from the Colorado and Platte River systems and its effect on threatened and endangered species downstream is described in the Biological Assessment (Appendix 3) for this document.

Effects of mineral material sales on wildlife habitat under this alternative would be greater than those under the No Action Alternative because of increased demand from activities and decreased restrictions. Greater sage-grouse winter range and nesting habitat, mountain plover aggregation areas, and large portions of big game crucial winter range and parturition areas would be subject to mineral material sales; therefore, adverse impacts on these habitats are expected, even with implementation of reclamation practices, because of the sensitivity of these habitats.

Effects on wildlife habitat from federal coal lands within the Coal and Sodium Occurrence and Development Potential Area would be greater than those under the No Action Alternative because of a lack of protection for wetlands, riparian areas (considered "vital" and "high" by WGFD), and floodplains, and the removal of the ACEC designation from Steamboat Mountain. This would result in a significant impact.

Impacts on federally listed and candidate species would be the same as those described under the No Action Alternative. Impacts on Wyoming BLM sensitive species would be greater than under the No Action Alternative because of a lack of nondiscretionary protection measures specific to these species. This would result in a significant impact.

Of the five alternatives, this alternative would likely have the greatest adverse impacts on wildlife. Many of these impacts would be significant.

4.4.6.4 Alternative 2

Impacts on wildlife habitat from the management of special status plant species and hunting activities would be the same as those under the No Action Alternative. Impacts on Wyoming BLM sensitive species would also be the same as those under the No Action Alternative; however, additional protection would be provided for mountain plover aggregation areas, with one-quarter-mile buffers, and for greater sage-grouse winter range, through their designation as NSO areas.

Prescribed fire (vegetation treatment) would have less adverse impact on wildlife cover under this alternative than under the No Action Alternative because prescribed burns would not be considered. Benefits to wildlife forage, other than treatment of noxious weeds, from prescribed fire would not occur under this alternative. Effects of wildfire on the basin big sagebrush/lemon scurfpea association would be greater than under the No Action Alternative because of limited fire suppression activities, possibly resulting in adverse effects on big game because of this association's role as a crucial habitat and parturition area.

The effects of watershed management actions would be the same as those under the No Action Alternative, although these beneficial impacts would be greater under this alternative because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.

This alternative would reestablish the boundaries of the Divide Basin Wild Horse HMA to exclude the JMH CAP planning area. A gathering plan would be developed and implemented to remove wild horses from the planning area and to maintain the AML within the reestablished boundaries of the HMA outside the planning area. Until reestablishment of the HMA boundaries and gathering of excess wild horses, impacts on wildlife habitat would be similar to those under the No Action Alternative. Constructing a fence to exclude wild horses from the planning area could affect migrating wildlife because of habitat fragmentation; however, adhering to BLM design standards for fence construction should minimize this effect. Removal of wild horses from the planning area would also increase forage and water sources for wildlife because of less competition among wild horses, livestock, and wildlife.

Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels. Effects of livestock grazing on wildlife habitat under this alternative would be similar to those under the No Action Alternative, except that exclosures and water developments would be allowed in sensitive wildlife habitat only if they preserved sensitive resources or improved habitat and resource conditions.

It is estimated that 11 livestock pits, ponds, and water wells might be created or rebuilt in the planning area under this alternative. Of these 11 water developments, 9 would be in the Green River Basin (Colorado River) and 2 would be in the Sweetwater River Basin (Platte River). Using 5 acre-feet per water development over the 20-year planning period, the average annual depletions anticipated to result from these actions would not exceed 2.3 acre-feet for the Colorado River system and 0.5 acre-feet for the Platte River system after all the developments were installed.

OHV use is expected to decrease under this alternative because of access limitations and lack of improvements in facilities near the Greater Sand Dunes Recreation Area. Estimated levels of recreation are discussed in detail in Section 4.7, Recreation Resources. The majority of OHV use would occur within the Greater Sand Dunes Recreation Area; however, some activity would also be expected throughout the planning area. Adverse impacts on wildlife habitat would be significantly less than under the No Action alternative because of the combination of a reduction in use and, most important, closure of sensitive wildlife habitats to OHV use. Seasonal limitations on OHV use in big game crucial habitat and limiting use in the remainder of the planning area to designated roads and trails would also contribute to the reduction of adverse impacts on wildlife habitat under this alternative.

Hunting activity is expected to be greater than under the No Action Alternative over the planning period because of decreased development and therefore limited access to the planning area. Adverse effects on wildlife would be short term as described under the No Action Alternative.

Overall adverse impacts of surface disturbance on wildlife habitat would be greatly reduced compared with the No Action Alternative because of designations that controlled, excluded, or seasonally limited surface disturbance in sensitive wildlife habitats (Map 28). Steamboat Mountain crucial overlap, wetlands, riparian areas, and floodplains and the Steamboat Mountain ACEC would be designated areas with controlled surface use under this alternative. Greater sage-grouse nesting concentration areas, greater sage-grouse winter range, elk and mule deer parturition areas, mountain plover aggregation areas (with a one-quarter-mile buffer), the Greater Sand Dunes ACEC, and raptor nesting sites (with a one-half- to 1-mile buffer) would be designated NSO areas under this alternative. Big game crucial habitat (winter range) would be seasonally limited. Adverse effects of ROWs on wildlife habitat under this alternative would be less than under the No Action Alternative because of designation of sensitive wildlife habitats as either ROW avoidance or exclusion areas (Map 27). Designation of these areas would provide adequate protection of wildlife habitat from ROWs so that only minimal adverse impacts from adjacent disturbances or areas that could not be avoided would occur.

Development of a transportation plan specific to the planning area would further reduce adverse impacts on wildlife habitat from ROWs, roads, OHV use, and general access. This plan would provide for appropriate access routes that enabled maximum protection of crucial habitats and sensitive resources.

Adverse effects on wildlife habitat from geophysical activities would be minimal because of provisions that exclude exploration in areas with NSO requirements, WSAs, ACECs, and other sensitive resource areas. Seasonal limitations would also apply, further reducing the impact on wildlife habitat.

Adverse effects on wildlife habitat from communication sites would be slightly less than under the No Action Alternative because sites would not be allowed within ACECs.

The majority of the planning area would be closed to new fluid mineral leasing because of closures of sensitive resource areas, which include all sensitive wildlife habitats (Map 31). Existing leases within the planning area would still be valid; however, purchase or exchange of those leases would be pursued with willing leaseholders. Approximately 163 oil and gas wells would be drilled over the planning period: 16 wells in the first 4 years with drilling steadily decreasing thereafter to 5 wells per year as producing wells played out. Adverse effects on wildlife habitat from fluid mineral development are expected to be much less than those under the No Action Alternative because of a reduction in the number of wells assumed for the planning period, closure of sensitive wildlife areas, and the purchase or exchange of existing leases. Because of uncertainty surrounding the number of leaseholders who would participate in the purchase or exchange of their leases, and the amount of funds available to BLM for this activity, it is unknown whether adverse impacts on wildlife habitat would occur and how great these impacts would be.

The effects of coalbed gas development would be approximately half of those described under the No Action Alternative because approximately half the number of wells would be drilled.

Assuming a total of 163 oil and gas wells and 25 coalbed gas wells, water depletions from oil, gas, and coalbed gas wells would total approximately 270 acre-feet from the Colorado River system and 12 acre-feet from the Platte River system. Based on a 20-year time span, the average annual depletion for the Colorado River and the Platte River systems would be 13.5 acre-feet and 0.6 acre-feet, respectively. Depletion of water from the Colorado and Platte River systems and its effect on threatened and endangered species downstream are described in the Biological Assessment (Appendix 3) for this document.

There would be no adverse effects from locatable mineral development, mineral material sales, coal leasing, or coal and sodium exploration because the entire planning area would be withdrawn from or closed to these activities (Maps 32–35).

Management actions associated with the addition of the paleosol deposition area to the Greater Sand Dunes ACEC and the addition of the area of highest concentration and overlap of big game habitat features, natural systems, and cultural values to the Steamboat Mountain ACEC would benefit wildlife habitat through further restrictions on activities within these sensitive areas. Management actions associated with designating special status plant species habitat, the cushion plant community, and the Pinnacles Geologic Feature as ACECs would also benefit wildlife habitat as described above.

Impacts on federally listed and candidate species would be the same as those described under the No Action Alternative.

This alternative would most likely have the least amount of adverse impacts on wildlife.

4.4.6.5 Alternative 3

Effects of prescribed fire (vegetation treatment) under this alternative would be similar to those under the No Action Alternative, except that treatments in aspen communities (big game parturition habitat) would be fenced on a case-by-case basis to reduce excess foraging by big game and livestock after prescribed burns, further protecting this habitat for future use by wildlife.

The effects of watershed management actions would be the same as those under the No Action Alternative, except that these beneficial impacts would be greatest under this alternative because of increased restrictions on surface disturbing activities and larger buffer zones around riparian areas and floodplains.

Because of the expansion of the Divide Basin Wild Horse HMA to include the entire planning area, adverse effects of wild horses on wildlife habitat are expected to be slightly less than those under the No Action Alternative because of an increase in forage area and water sources. Impacts would be only slightly less because a maximum of 100 horses of the 415–600 AML would be allowed in the expanded area.

Although livestock operators could increase AUM use to the fully permitted amount, anticipated use of AUMs would be similar to historic levels. Effects of livestock grazing on wildlife habitat under this alternative would be the same as that under the No Action Alternative, except that water developments would be allowed in sensitive wildlife habitat only if they maintained or improved habitat and resource conditions.

Effects on the habitat of endangered fish, wildlife, and/or plant species in the Colorado and Platte River systems from water depletions caused by construction of livestock water developments would be the same as those under the No Action Alternative.

Impacts on wildlife habitat from the management of special status plant species would be the same as those under the No Action Alternative. Impacts on Wyoming BLM sensitive species would be the same as those under the No Action Alternative, except that additional area (greater sage-grouse winter range) would be seasonally limited, greater sage-grouse nesting habitat within 2 miles of the lek would be under seasonal limitations, and mountain plover aggregation areas (with a one-quarter-mile buffer) would be avoidance areas for surface disturbance activities.

OHV use is expected to remain constant because the facilities near the Greater Sand Dunes Recreation Area would not be improved and access limitations would remain in place. Estimated levels of recreation activity are discussed in detail in Section 4.7, Recreation Resources. The majority of OHV use would occur within the Greater Sand Dunes Recreation Area; however, activity is also expected throughout the planning area. Adverse impacts on wildlife habitat would be less than under the No Action Alternative because of the combination of a reduction in use and restrictions on wildlife habitat such as closure of raptor nesting sites (with one-half- to 1-mile buffers) and greater sage-grouse leks (with one-half-mile buffers). Seasonal limitations would remain the same as under the No Action Alternative, except that raptor nesting sites would be closed and mountain plover aggregation areas (with one-quarter-mile buffers) would be added.

Hunting activity in the planning area would be the same as under the No Action Alternative.

Recreation activities other than OHV use (camping, hiking/biking, recreational mining) would be expected to increase steadily throughout the planning period; however, camping would be allowed only in designated areas, and recreational mining would occur only on a 5-acre site, reducing the impacts from these activities compared with the No Action Alternative.

Adverse effects of surface disturbance on wildlife habitat would be reduced compared with the No Action Alternative because of designations that controlled, excluded, or seasonally limited surface disturbance on sensitive wildlife habitats (Map 39). Wetlands, riparian areas, and floodplains, as well as all ACECs, are designated areas with controlled surface use under this alternative. Greater sage-grouse leks (with one-half-mile buffers) and raptor nesting sites are designated NSO areas under this alternative. Permanent or high-profile structures would also be limited within a specified distance of these areas. Big game crucial habitat (winter range) and parturition areas, mountain plover aggregation areas (with one-quarter-mile buffers), greater sage-grouse nesting habitat within 2 miles of leks, greater sage-grouse winter range, and raptor nest sites (with one-half- to 1-mile buffers) would be seasonally limited. These restrictions would reduce adverse impacts on these species during important times of their life cycle; however, they would not prevent further habitat destruction from occurring, which might result in the selection of alternative habitats. The option to time and sequence activities if adverse effects occurred would allow possible adjustment of habitat use. It is assumed that even with the additional protections for greater sage-grouse under this alternative, populations would continue to decline because the management of these birds' habitat would be insufficient for recovery or stabilization of populations in the planning area. Because the greater sage-grouse is a BLM sensitive species, any loss of habitat function or value would constitute a significant impact. Also, these birds are classified by the WGFD as "vital," and any increased mortality or decreased survival would be considered a significant impact. This alternative might result in significant impacts on the birds, depending on the location and sequencing of disturbances.

Adverse effects of ROWs on wildlife habitat under this alternative would be slightly less than under the No Action Alternative because of changes in sensitive wildlife habitat designation as either ROW avoidance or exclusion areas (Map 40).

Development of a transportation plan specific to the planning area would further reduce adverse impacts on wildlife habitat from ROWs, roads, OHV use, and general access. This plan would provide for appropriate access routes that enabled maximum protection of crucial habitats and sensitive resources.

Adverse effects on wildlife habitat from geophysical activities would be minimal because of provisions that exclude exploration from areas with NSO requirements, WSAs, ACECs, and other sensitive resource areas. Seasonal limitations would also apply, further reducing the adverse impact on wildlife habitat.

Adverse effects on wildlife habitat from communication sites would be slightly less than under the No Action Alternative because of the additional exclusion areas (Oregon Buttes and Continental Peak) added under this alternative.

The entire planning area, except WSAs, would be open to fluid mineral leasing (Map 42). Approximately 205 oil and gas wells would be drilled over the planning period: 18 wells per year in the first 4 years with drilling then steadily decreasing to 7 wells per year as producing wells played out. Adverse effects such as those described under the No Action Alternative would occur; however, an adaptive management process would be implemented under this alternative that would establish indicators to inform BLM of any adverse effects of actions within the planning area and prevent the effects from becoming significant through BLM's ability to control timing of development activities if needed. Adverse effects of existing leases (as described above in the Common to All Alternatives section) would still occur; however, once leases expired they would become part of the adaptive management process.

The effects of coalbed gas development would be the same as those described under the No Action Alternative.

Assuming a total of 205 oil and gas wells, with the remaining assumptions being the same as those under the No Action Alternative, water depletions from oil, gas, and coalbed gas wells would total approximately 367.5 acre-feet for the Colorado River system and 15 acre-feet for the Platte River system. Based on a 20-year time span, the average annual depletion for the Colorado River and Platte River systems would be 18.4 acre-feet and 0.75 acre-feet, respectively. The depletion of water from the Colorado and Platte River systems and its effect on threatened and endangered species downstream are described in the Biological Assessment (Appendix 3) for this document.

There would be some limited adverse effects on the northern parturition areas from existing mining claim activities; however, effects would be reduced because of the withdrawal of this habitat under this alternative (Map 45). Withdrawal of portions of Steamboat Mountain and of the area added to the Greater Sand Dunes ACEC would also reduce adverse effects of mining on wildlife habitat. The effects of locatable mineral development on wildlife habitat would otherwise be the same as under the No Action Alternative.

The planning area would be open for consideration of mineral material sales except in certain sensitive wildlife habitat (Map 46). Closing these areas to mineral material sales would benefit a portion of wildlife habitat; however, having Steamboat Mountain ACEC open to sales would cause greater adverse effects on big game. Overall impacts of mineral material sales on wildlife habitat could be slightly greater than those under the No Action Alternative.

The effects of coal and sodium exploration on wildlife habitat would be less than those under the No Action Alternative because of the additional closure of Steamboat Mountain ACEC.

The effects of coal leasing on wildlife habitat would be less than under the No Action Alternative because additional areas would be protected.

Management actions associated with the expansion of the Greater Sand Dunes and the Steamboat Mountain ACECs would benefit wildlife habitat through further restrictions on activities within these sensitive areas. The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area, and Steamboat Mountain ACEC would be expanded to include Indian Gap and the face of Steamboat Mountain. Management actions associated with designating special status plant species and the cushion plant community as ACECs would also benefit wildlife habitat as described above.

Impacts on federally listed and candidate species would be the same as those described under the No Action Alternative.

4.4.6.6 Proposed JMH CAP

Two types of adverse impacts on wildlife are common to all alternatives: displacement and habitat fragmentation. However, these two types of adverse impacts would vary in degree depending on alternative. Displacement resulting from surface disturbing or disruptive activities moves animals into less desirable habitat and creates competition for available resources with other species and uses. Wildlife displacement can be either direct or indirect, depending on the amount and type of activity.

The amount of land used for road surfaces, well pads, stock tanks, and any recreation facilities represents a direct loss of wildlife habitat. The actual effect caused by surface disturbing and disruptive activities in desert areas void of tall stands of vegetation or dramatic topographic relief is greater than the direct loss of acreage indicates. Wildlife habitat loss results from road construction and road use, facility construction and placement, pipeline construction, field facility maintenance, ROW construction, range improvement construction, and disturbance zones around these areas. Not all disturbed acreages would be fully reclaimed to the same structure and density that existed in predisturbance conditions, and portions, particularly in shrub communities and stabilized sand dunes, could remain unavailable as habitat for wildlife for more than 20 years. The basin big sagebrush/lemon scurfpea community habitat would likely take up to 70 years to reach their predisturbance structure and density. Limited rainfall, poor soils, and severe winter conditions make reclamation difficult, increasing the time required to reestablish suitable vegetation to predisturbance composition and density.

Activities in desert-type terrain tend to displace wildlife, particularly big game species by distances of more than 3 miles because of extended sight distances and lack of security cover. The loss of adjacent habitats due to harassment or habitat degradation is much more subtle but has been observed and documented.

Elk have been shown to avoid disturbance by upwards of 1.25 miles from active oil and gas wells (Gussey 1986; Powell 2003; WGFD 2000), upwards of 2.4 miles from construction of drill sites (Hayden-Wing Associates 1990), and upwards of 1.25 miles from major roads (Powell 2003). Disturbance is also avoided or reduced by topographic visual barriers between the source of disturbance and the elk (Irwin and Gillin 1984; Ward 1986; Olson 1981; Kuck et al. 1985; Van Dyke and Klein 1996). This disturbance is usually temporary, however, and some studies have shown that elk return to the area of disturbance once the source of disturbance and human presence are gone (Gussey 1986; WGFD 2000), albeit at 50 percent of previous levels in forested environments (Hayden-Wing Associates 1990). Studies particular to oil and gas activities have shown that elk tolerate some level of operating wells and associated facilities as long as there is no human presence or cover is available in the vicinity of the well site (Gusey 1986; Beak Consultants 1979; Bennington et al. 1982; Hayden-Wing Associates 1990).

Van Dyke and Klein (1996) found that elk showed no shift in home range between the pre and post drilling of a single oil well with all roads closed to other traffic and remote monitoring during sensitive periods. However, they shifted use of core areas out of view of the drill pad during both periods, there was increased intensity of use in core areas after drilling, and a slightly reduced total range was used. Van Dyke and Klein concluded that if drilling occupied a relatively small amount of home range, elk were able to compensate by shifting areas of use.

Kuck et al. (1985) showed that persistent disturbance weakened the tendency of elk (in forested environments) to return to the disturbed area and that selection of more marginal habitat occurred. However, abandonment of the traditional calf-rearing habitat did not result in abandonment of calves or a difference in survival rates between disturbed and control groups. This study also found no data to suggest that elk habituated to mining noises. Johnson and Wollrab (1987) also found that elk distribution changed during gas exploration and field development, with the abandonment of winter and calving habitat and changes in range. These authors discovered that although elk returned to disturbed sites, populations were lower (sometimes less than half) and use of the habitat was unpredictable.

When studying elk response to roads, Lyon and Ward (1982) found that elk moved from 0.24 to 1.8 miles, depending on the amount and type of traffic, road quality, and adjacent cover density. Generally, road avoidance has been reported to be greater in areas of open vegetation with less adjacent cover (Perry and Overly 1976; Lyon 1979) and in areas with increased density of high-quality roads (Hershey and Leege 1976). Road avoidance also was greater in shrub lands than in pine forests and juniper woodlands (Rost and Bailey 1979).

A JMH Desert Elk Study was initiated in 1999 to better understand the effects of human disturbance on elk behavior and habitat use within the planning area. The findings of this study are outlined in Section 3.1.6.1.3 and include the following: Elk typically avoided habitats offering little security cover; topography and screening cover by vegetation were important during daylight hours for providing security cover; habitat use patterns within the planning area were strongly influenced by roads, making the habitat loss much more than that of the actual road "footprint"; human disturbance led to increased daily movements of disturbed elk and reduced elk use of traditional calving areas; and although disturbed elk moved greater distances, they apparently did not move to areas that were poorer in terms of security or habitat quality (Powell 2003).

In contrast to the numerous studies conducted on the effects of human disturbance on elk (as shown above), significantly fewer studies have been conducted on the effects of such disturbance, particularly from roads and/or oil and gas development, on mule deer and pronghorn antelope. For this reason, possible effects on these species are not well understood. Rost and Bailey (1979) found that mule deer avoided roads by up to 200 meters (0.12 miles) and that road avoidance was greater where roads were more traveled and in shrub versus forested habitats. There are no published studies on pronghorn antelope reactions to roads; however, it has been documented that woven wire ROW fences along roads impede or block antelope movement, resulting in fragmentation of habitat (Deblinger 1988; Bruns 1977) and pronghorn deaths due to reduction or elimination of access to severe winter relief range.

Hiatt and Baker (1981) examined the effects of a single well installation on winter distributions of elk and mule deer. They found that both species avoided the drilling site during drilling but did not avoid the access road. They also examined the vegetation present at the well location and concluded that shifts in usage were not the result of differences in vegetation. Easterly et al. (1991) examined the winter distribution and habitat use of pronghorn and mule deer within a petroleum production complex and found that pronghorn used four of six oil fields in proportion to their availability and that mule deer used five of six oil fields in proportion to their availability. Two of the most active oil fields were used less than expected by pronghorn given their availability, and no mule deer were observed within one of the most active oil fields. Easterly et al. concluded that there was continued use of winter range by pronghorn and mule deer after construction of an oil and gas field.

It is generally agreed that once disturbance reaches a certain threshold, impacts are expected to become significant. Further study and monitoring are needed to determine this threshold for the planning area.

Habitat fragmentation occurs when a contiguous habitat is broken up (fragmented) by surface disturbing activities, causing a reduction in usable ranges and the isolation of smaller, less mobile species; a loss of genetic integrity within species or populations; and an increase in abundance of the habitat generalists that are characteristic of disturbed environments (i.e., competitors, predators, and parasites) (Harris 1998). The primary factor affecting wildlife species (especially big game) within the planning area is the reduction in usable habitat and the disruption of migration corridors that link crucial habitat (winter range) and parturition areas. This would occur particularly in areas with many access roads and surface disturbances. Transportation routes tend to fragment habitats and can act as barriers to some species, especially under severe winter conditions. This could also increase public access to areas that had previously been relatively inaccessible to vehicles during the winter and spring. This effect would become more important and would increase adverse effects on wildlife as increased demands for use of public lands occurred. Migration routes could be altered, changing some traditional use patterns on a local level. Seclusion areas for wildlife would become smaller and more dispersed in some areas. Increased oil and gas activity, especially in areas with reduced well spacing (40- and 80-acre spacing) would preclude use of some of these areas by wildlife species, especially deer and elk. Existing leases within the planning area might not provide the specific mitigation measures needed to protect important wildlife habitats. In specific cases where stipulations were not adequate to protect habitat, COAs for APDs could be applied. These would be based on site-specific analysis and would establish specific, necessary mitigation measures not covered by stipulations for resource and environmental protection. BLM specialists would review sensitive resources with lease operators to develop and implement protective measures to allow effective development operations where impacts could be avoided or mitigated. Depending on the economics of the industry at the time, it is possible that developers could claim an economic hardship and might not have to implement recommended mitigation measures. Greater sage-grouse populations have been declining over the past half century due to such factors as habitat degradation, fragmentation, and loss (see Chapter 3). As oil and gas development has increased in Wyoming, so has concern over how this type of development might affect greater sage-grouse populations. Potential impacts of fluid mineral development on greater sage-grouse populations include: direct habitat loss from well, road, pipeline, and transmission line construction; displacement caused by increased human activity and associated pumping noise; increased legal and illegal harvest; and direct mortality associated with evaporation ponds and increased exposure to predation (Braun 1986; TRC Mariah Associates Inc. 1997).

A study of the greater sage-grouse of the Pinedale Mesa near Pinedale, Wyoming, was conducted by Lyon in May 2002 to examine the effects of natural gas and oil development on use, productivity, general movements, and habitat use of greater sage-grouse. The results of the study indicate that hens captured on disturbed leks had lower nest initiation rates; traveled twice as far to nest sites; and selected, for height, greater total shrub canopy cover and live sagebrush canopy cover than did hens captured from undisturbed leks. Lyons concluded that extreme early brood survival appeared to be the limiting factor in greater sage-grouse population stability on the Pinedale Mesa and that this suggested that disturbances (i.e., noise and predation) associated with well drilling and road traffic during breeding could result in reduced nest initiation rates and could be causing lower brood survival.

Other studies conducted on greater sage-grouse indicate that noise might be adversely affecting strutting and nesting grouse; however, the level of impact is still unknown (LaGory et al. 2001; Dantzker et al. 1999).

As documented in Chapter 3, greater sage-grouse nesting and wintering habitat requirements are quite specific. If this habitat were disturbed, more than 20 years might be required to restore affected habitat to predisturbance conditions. During this time, however, opportunities may exist to enhance remaining vegetation and habitat characteristics (for example, by applying vegetation treatments to create a mosaic in the landscape) to provide more suitable habitat than currently exists. If that cannot be accomplished, there would be a net loss of habitat function and adverse impacts on greater sage-grouse habitat during the planning period.

The health of fisheries within the planning area is directly related to the overall health and functional capabilities of riparian resources, which in turn are a reflection of watershed health. Any activities that affected the ecological condition of the watershed and its vegetative cover would directly affect the aquatic environment. It is assumed that any substantial disturbance to soils or changes in vegetative cover would have an adverse effect on watershed health and water quality and would therefore have an adverse effect on associated fisheries. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, time and degree of disturbance, existing vegetation, and precipitation. Surface disturbances result in accelerated erosion and runoff, increasing stream flow and sediment and nutrient loads to local channels. Sedimentation of a given channel can impact fisheries by reducing habitat complexity, which results in a lower diversity of prey organisms. Increased turbidity also results from increased sediment input, which decreases light penetration and inhibits visual predation by fish. Any surface disturbance near streams that results in substantial removal of riparian vegetation can increase current velocity, which puts additional strain on fish and reduces nutrient cycling. In addition to increased sediment input, streambank disturbance can affect fisheries by creating bank instability, which can alter flow and destroy pool-riffle formations necessary for fish survival. Increased nutrient loading of streams can impact fisheries by increasing primary production above natural levels, which degrades habitat and decreases oxygen levels. Because any impact on natural water resources is also an impact on fisheries, impacts on fisheries can be inferred from Section 4.4.2, which discusses impacts on riparian areas and water quality.

Oil and natural gas production may result in the use of pits to separate oil from produced water or to evaporate large volumes of water with high levels of TDS. Birds are attracted to pits because they mistake them for natural bodies of water. The sticky oil then entraps birds in the pits, and they die from exposure and exhaustion. Birds that do manage to escape can die from starvation or experience impaired reproduction caused by the toxic effects of oil ingested during preening. Scavengers and predators can also suffer adverse effects from consuming oiled birds. Pits or ponds containing hypersaline water can pose a mortality threat to migratory birds through ingestion of toxic brine, susceptibility to avian botulism, and sodium crystallization on feathers, which destroys thermoregulatory and buoyancy functions. A study of bird mortality in oil pits in Wyoming conducted by Brent J. Esmoil for the University of Wyoming demonstrated that deterrents such as flagging, strobe lights, metal reflectors, and noisemakers were not effective in preventing bird mortalities in these pits. Esmoil did not find any mortality in pits completely covered with netting or wire mesh with mesh sufficiently small to prevent songbirds from falling through the wire (USFWS 2003). It is BLM standard practice that pits with harmful fluids in them be maintained in a manner that prevents migratory bird mortality, thus eliminating potential effects.

Use of prescribed fire as a vegetation treatment in the planning area could benefit many wildlife habitats because it aids in regeneration of some tree and shrub species and allows additional wildlife forage. One adverse effect of prescribed fire on wildlife habitat is extensive forage utilization by big game species after treatment of aspen stands. To reduce adverse effects on aspen communities, treatments would be fenced on a case-by-case basis. Another possible adverse impact of prescribed fire in the planning area would be loss of cover. Conversions of shrubs to grassland using prescribed fire would contribute to a direct loss of cover for species (such as small mammals, greater sage-grouse, and big game) that require cover for security to carry out life stages. The effects of loss of cover could be long-term, particularly because it takes sagebrush more than 20 years to reach the appropriate canopy cover height and spacing needed for some sagebrush-dependent species. Greater sage-grouse are particularly susceptible to loss of cover from fire activities because of the relationship between their breeding, brood-rearing, and wintering habitat and sagebrush. Significant long-term adverse impacts on greater sage-grouse nesting habitat and winter range could occur if large acreages were burned. Brood-rearing habitat might also be negatively affected by prescribed burns; however, further investigation is needed. No prescribed fires would be allowed within the basin big sagebrush/lemon scurfpea vegetation association; therefore, effects on wildlife dependent on this association would not occur.

Watershed management would provide benefits to wildlife by maintaining or restoring habitat conditions through the establishment of DPC objectives, placement of buffer zones around riparian areas, and restrictions on surface disturbance within riparian areas and floodplains. Actions that would maintain or improve watershed conditions would generally benefit the ecological condition of wildlife habitat.

Wild horses currently occur in the planning area outside the identified HMAs. This compounds problems associated with limited water sources and big game crucial habitat (winter range). Wild horses concentrate in the core area during the summer months and compete with big game for available forage during winter months (November through March). With livestock competition for available water and forage added to wild horse competition, adverse impacts on big game would be expected. Water developments provided on an as-needed basis would reduce this competition and therefore lessen adverse impacts on big game. All water developments within sensitive wildlife habitats would be considered only if wildlife habitat and resource conditions were improved or maintained. Adverse impacts in the planning area from wild horses would also be minimal provided that numbers were kept at plan objective levels and the herd was maintained within the HMA.

The effects of livestock grazing on wildlife would be minimal because management actions (livestock water developments, exclosures, fencing, and conversions) for improving rangeland and riparian habitat must meet the Wyoming Standards for Healthy Rangelands (Appendix 10). Forage utilization levels would be evaluated on a case-by-case basis and would factor in forage for livestock, wildlife, and wild horses. Water developments proposed in sensitive wildlife habitat would be considered only if the habitat and resource conditions would be maintained or improved and could benefit wildlife by providing additional sources of water. Water developments could also adversely affect wildlife habitat, particularly in winter and parturition ranges, through reductions in forage due to increased distribution of animals. However, implementation of the Wyoming Standards for Healthy Rangelands would ensure that impacts were not significant. Adverse impacts of fences on wildlife within the planning would be minimal because of requirements that fences be located so as not to impede wildlife movement and that the fences be removed, modified, or reconstructed where documented conflicts with wildlife occurred. Future livestock conversions (sheep to cattle or vice versa) would be carefully analyzed. Sustainability reviews would be required before conversions, which would benefit the range.

It is estimated that 23 livestock pits, ponds, and water wells could be created or rebuilt in the planning area. It is assumed that all water used for livestock pits, ponds, and water wells within the Green River and Sweetwater River Basins would have contributed to the surface flows of the Colorado or Platte Rivers or their tributaries. Water depletions are an important issue because water from portions of the planning area is part of the habitat for endangered fish, wildlife, and/or plant species downstream from the project area in the Colorado and Platte River systems. Of the 23 water developments to be constructed, 19 would be in the Green River Basin (Colorado River), and 4 would be in the Sweetwater River Basin (Platte River). Using 5 acre-feet per water development over the 20-year planning period, average annual depletions anticipated from these actions would not exceed 5 acre-feet for the Colorado River system and 1 acre-foot for the Platte River system after all developments were installed.

The potential exists for additional strain on forage resources within portions of the planning area (south-central) from potential concentrations of grazing animals. Heavy concentrations of grazing animals could result in overutilization of vegetation. However, monitoring and evaluation of habitat to comply with the "Wyoming Standards for Healthy Rangelands" should provide information on vegetation resources before impacts became significant.

Protections afforded to special status plant species would benefit wildlife habitat by protecting plant species from surface disturbing and disruptive activities. Reduction of invasive species would also benefit wildlife habitat through maintaining the quality of habitat by requiring provisions to reduce and control invasive species.

The management of heritage sites would indirectly benefit wildlife through preservation of potential habitat as well as general habitat characteristics. Disturbance and removal of vegetation could occur through activities related to management of heritage resources; however, any impact would generally be limited to relatively small areas. Even under the most intense management (i.e., excavation), the amount of habitat disturbed would be very small. However, such disturbance could still have significant impacts on small animals (e.g., pygmy rabbits, a BLM sensitive species and WGFD classification as "high" value) occupying those areas.

OHV use is expected to increase because of improvements in the facilities near the Greater Sand Dunes Recreation Area, increased interest in the planning area, and increased access due to development activities. Estimated levels of recreation activity are discussed in detail in Section 4.7, Recreation Resources. The majority of OHV use would occur within the Greater Sand Dunes Recreation Area; however, activity is also expected throughout the planning area. No significant impacts on wildlife (specifically elk, mule deer, antelope, greater sage-grouse, and raptors) are expected from OHV use because of the ability to place seasonal restrictions on OHV users (Map 52) at crucial times in sensitive habitats; seasonal closure of Steamboat Mountain; limitation of access to designated roads and trails in the Steamboat Mountain ACEC; and the fact that the majority of OHV use in the planning area (outside the seasonal closure area) would occur in the summer and fall (June through October), a time when wildlife would be the least sensitive to human disturbance. However, OHV use would have localized adverse impacts on wildlife through disturbance due to human presence, and a small amount of surface disturbance. Additional areas of seasonal restrictions could be implemented as needed to reduce adverse impacts. ROWs (such as pipelines and power lines) could adversely affect wildlife habitat through disturbances related to associated roads, increased access, and associated displacement caused by human presence. Many of these alternations of habitat favor predators, thereby increasing predation of species such as the greater sage-grouse. Although companies might not need to travel pipeline routes, removal or crushing of vegetation would allow increased access for recreationists, causing further intrusion into wildlife habitat and increased disturbance. Currently, numerous two-track-type roads access almost all parts of the planning area, although these are used primarily seasonally during hunting. Aboveground pipelines would have less adverse impact on crucial wildlife habitats (big sagebrush, mountain shrubs, woodland habitats, stabilized sand dunes); however, these pose a threat to public safety, primarily to OHV users.

ROW impacts on sensitive wildlife habitat contained in the South Pass Historic Landscape ACEC, West Sand Dunes Archaeological District, greater sage-grouse nesting habitat, and connectivity area would be reduced because of these areas' designation as avoidance areas (Map 49). To the extent possible, utility and transportation ROWs would be located to coincide with existing roads, trails, and other ROWs or easements, further reducing adverse impacts on wildlife.

Communication sites and related access, when located in crucial habitat (winter range) and parturition areas, would have significant impacts on those habitats. Access to these sites occurs year-round. Year-round access could result in plowing of roads that displaces wintering wildlife, which would add to their stress caused by winter conditions, and disrupt parturition areas. Plowing of these roads would also allow more recreational traffic to use these areas year-round. The Steamboat Mountain ACEC and the Steamboat Mountain Management Area would be closed to communication sites, which would greatly reduce possible adverse impacts on the majority of big game habitat.

Effects of geophysical exploration and related detonation activities on wildlife would be minimal given limitations on exploration within key wildlife habitats such as the connectivity area, basin big sagebrush/lemon scurfpea, and a one-quarter-mile buffer around greater sage-grouse leks. Exploration and related detonation activities also would be allowed in sensitive resource areas only if they could be performed with acceptable mitigation of impacts.

Overall, the development of a transportation plan specific to the planning area would further reduce adverse impacts on wildlife habitat from ROWs, roads, OHV use, and general access. This plan would provide for appropriate access routes, which enable maximum protection of crucial habitats and sensitive resources. Further reductions in adverse effects of transportation and access to big game would occur through development of a travel management plan for Steamboat Mountain, White Mountain, Essex Mountain, and the two northern parturition areas, to control development access.

Recreation activities (camping, hiking/biking, recreational mining) in the planning area would be expected to increase steadily throughout the planning period. Recreation activities would have localized adverse impacts on wildlife through disturbance due to human presence, and a small amount of surface disturbance. It is unknown whether these impacts would be short term or long term. Developed recreation sites would not be constructed in greater sage-grouse nesting habitat.

Hunting activity in the planning area has been shown to have short-term adverse effects on elk, and most likely all wildlife, in the planning area because of an increase in human activities and disturbance (Powell 2003). Hunting is expected to remain constant; therefore, the level of short-term disturbance from increased human activity would remain the same.

Greater sage-grouse lek, nesting, and early brood-rearing habitat locations (as determined by site-specific analysis) would be avoidance areas for surface disturbing and disruptive activities and would be protected from direct habitat loss and degradation. Habitat quality at these locations would also be improved on an as-needed basis. These management prescriptions provide the greatest amount of protection to the species under the JMH CAP alternatives; however, a large portion of greater sage-grouse habitat is located within areas that contain existing leases. As discussed previously, existing leases might not provide the specific mitigation measures needed to protect important wildlife habitats. In these cases, COAs might be necessary, as determined by site-specific analysis. A portion of greater sage-grouse habitat is also located within Area 3 of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17), which would retain a “no lease” management prescription or an NSO stipulation that would ensure protection of unleased habitat in Area 3 as well as habitat within leased areas for which the leases expired before they were developed or held by production. The majority of identified greater sage-grouse breeding and winter range occurs in Area 1, identified for immediate sale of new leases. In addition to areas designated with surface disturbance restrictions, seasonal limitations would apply to all greater sage-grouse winter range, as well as to raptor, mountain plover, and big game sensitive habitats. These restrictions would reduce adverse impacts on these species during important times of their life cycle; however, they would not prevent further habitat destruction from occurring, which could result in the selection of habitats of lower quality.

Approximately 205 fluid mineral wells (exploration, discovery, production) would be drilled over the planning period. Drilling could occur throughout the planning area, except in unleased portions of Area 3 of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17), on leases with an NSO stipulation, and in WSAs. It is likely that drilling would occur mostly on existing leases for the first few years of development. The phase of fluid mineral activity most disturbing to wildlife is drilling because of the high level of human disturbance from the creation of access roads, surface disturbance from the well pads (approximately 3 acres), noise from the rig during drilling, and overall human presence. This phase of activity lasts approximately 1 to 4 months depending on well depth. All wells not put into production would be reclaimed through implementation of a reclamation plan. Production wells that played out after an estimated 30 years would also be reclaimed. Full restoration of some habitats (shrubland and basin big sagebrush/lemon scurfpea) would not occur for more than 20 years.

Big game, especially elk and mule deer, would experience adverse effects from fluid mineral development, causing avoidance of areas through drilling, creation of roads, and possible disruption of migratory corridors. The level and duration of adverse effects would depend on where the activity occurred within the planning area. It is assumed that the majority of development would be concentrated in the high development potential area, a large portion of which is contained within Area 3 of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17). The majority of big game sensitive habitats are also located within Area 3. A portion of Area 3 would retain a “no lease” management prescription or would be leased with an NSO stipulation that would ensure protection of big game sensitive habitat in these areas. A large portion of sensitive big game habitats within Area 3, however, are in areas that have already been leased. The majority of existing leases have a minimum stipulation that protects big game habitat seasonally, but as shown in the analysis of the other alternatives, seasonal restrictions do not prevent destruction of habitat, resulting in the selection of suboptimal habitats. In specific cases where stipulations would not be adequate to protect big game habitat, COAs for APDs could be applied, as discussed previously. Without specific mitigation, such as remote monitoring, pad drilling, directional drilling, and centralized tank batteries, development activities could prevent big game from using the affected area for the life of the activity. This has the potential to cause significant effects on big game through long-term displacement from habitat, with the severity of the effects depending on the amount, timing, and duration of activity.

As part of the “no lease” prescription in Area 3, existing leases that expired before they were developed or were held by production would not be reoffered for lease, further protecting big game habitat resources. Because of this, however, development on existing leases within Area 3 is expected to occur in the first 11 years of the planning period, instead of over the life of the plan (20 years). A shortened development period in Area 3 would likely result in the following: existing leases’ being developed concurrently, or within close time periods that would not allow habitat in those areas to recover before other areas were developed; displacement of big game into habitats that were not leased, causing possible overuse of available habitat and increased competition among and between species for available habitat; and long-term disruption of migration from the northern parturition areas to the core area because of the location of existing leases south of Oregon Buttes ACEC. These effects could be significant for big game habitats, depending on the amount, timing, and duration of development activities, and could be greater than those under the No Action Alternative because of the potential for lack of alternate habitats for big game species due to concentrated timing of development in Area 3.

It is estimated that two coalbed gas exploration projects with a total of 50 wells would be drilled within the planning area (but outside the core area) during the planning period. Impacts on wildlife, particularly big game, are expected to be significant for animals in those localized areas. Because coalbed gas wells are drilled in a "pod" formation for dewatering purposes, with approximately 25 wells per pod, impacts are expected to be intense and localized but might not affect as much acreage as traditional oil and gas well development.

Drilling and completion activities for oil, gas, and coalbed gas wells would use local water sources and would therefore deplete water from portions of the planning area that are part of the habitat for endangered fish, wildlife, and/or plant species downstream from the project area in the Colorado River and Platte River systems. It is assumed that all water used for drilling and completion of wells within the Green River and Sweetwater River Basins would have contributed to the surface flows of the Colorado or Platte Rivers or their tributaries. Of the 205 oil and gas wells to be drilled, 95 percent would be in the Green River Basin (Colorado River), and 5 percent would be in the Sweetwater River Basin (Platte River). All of the coalbed gas wells (50) would be in the Green River Basin.

Using 1.5 acre-feet of water per well, depletions from these actions would total approximately 367.5 acre-feet in the Colorado River system and 15 acre-feet in the Platte River system. Based on a 20-year time span, the average annual depletion for the Colorado River and Platte River systems would be 18.4 acre-feet and 0.75 acre-feet, respectively. Depletion of water from the Colorado and Platte River systems and its effect on threatened and endangered species downstream are described in the Biological Assessment (Appendix 3) for this document.

Locatable mineral activity on existing active claims in and around northern parturition areas has the potential to decrease and eliminate the availability of these areas for calving and fawning. This particularly applies to activities that might occur in or near aspen stands associated with deer and elk parturition areas, although some of the aspen stands would be withdrawn as part of the South Pass Summit. Withdrawals would also be pursued for the northern parturition areas, further reducing effects. These areas are also important to a variety of birds and other wildlife and are rare habitat types in the planning area. Although current exploration activities are seasonal, with little or no activity during the winter, mining activities could continue at the current rate, or even increase, during the fawning and calving periods, causing displacement of animals. There is limited information available on the likelihood of other locatable mineral development (such as commercial diamond or gold mining) in the planning area. If exploration activities found the potential for such development, a plan of operation would have to be filed that specified how mining would be conducted without permanently impacting other resources. Reclamation plans would also have to be developed, and bonds posted, to ensure that mined lands were reclaimed.

Habitat within the planning area would be open for consideration of mineral material sales except for habitat within one-half mile to 1 mile of raptor nesting sites, the Steamboat Mountain ACEC, the Steamboat Mountain Management Area, and greater sage-grouse nesting habitat (Map 58). Closing these areas to mineral material sales would benefit the majority of wildlife habitat within the planning area, resulting in minimal localized effects on wildlife through possible disturbance of open habitats.

Coal and sodium exploration would be allowed on a case-by-case basis (with mitigation for protection of sensitive resources), except in wetlands, riparian areas, and floodplains; within one-quarter mile of sage grouse leks; in raptor nesting sites; and in the Steamboat Mountain ACEC (Map 55). Effects of this exploration on wildlife habitat are expected to be minimal because of the limited surface disturbance associated with exploration and the mitigation included in proposals, which could include seasonal limitations, access restrictions to existing roads and trails, and full reclamation.

Only federal coal lands within the Coal and Sodium Occurrence and Development Potential Area would be open to consideration of leasing (Map 57). This would reduce adverse effects on wildlife habitat from coal leasing overall. In addition, a portion of the Greater Sand Dunes ACEC would be closed to leasing within this area. Raptor nesting sites (with a one-half- to 1-mile buffer), Steamboat Mountain ACEC (big game parturition and crucial habitat), and Steamboat Mountain Management Area would also be open to coal leasing with subsurface mining and controls on surface facilities, further minimizing adverse impacts on wildlife. Additional measures would be implemented for maintenance of adequate big game habitat. Overall, coal leasing is expected to have negligible impacts on wildlife because the projected demand for developing this resource in this area is minimal.

The federally listed black-footed ferret, which may occur within the planning area, might be affected by management actions but would not likely be adversely affected. The black-footed ferret could be affected because of the amount of surface disturbance and human activity associated with management of the planning area; however, no adverse effects are expected to occur because of the surveys required for threatened and endangered species before surface disturbance activities and the subsequent protection measures developed by BLM in conjunction with FWS should a species be found. No impacts on the bald eagle, grizzly bear, gray wolf, or western population of the yellow-billed cuckoo are expected from management of the planning area, because of a lack of suitable habitat or because of these species' status as casual migrants or experimental populations.

Potential effects on the Wyoming BLM sensitive species mountain plover and greater sage-grouse are discussed above. It is unknown whether adverse impacts on other Wyoming BLM sensitive species would occur, because of the lack of information on habitat locations and the requirements within the planning area. Searches for the species would be required in any potential habitat before approval of any project or activity in those areas. If such species were found, mitigation measures would be species-specific and determined on a case-by-case basis.

Protections afforded to special management areas and other management areas would generally result in beneficial impacts on wildlife resources. Protections aimed at conserving vegetation resources, and limitations on surface disturbing activities, would benefit wildlife by enhancing overall habitat conditions. The addition of the West Sand Dunes Archaeological District as a special management area would reduce adverse effects on big game habitats through management prescriptions that controlled surface disturbing and disruptive activities. The expansion of the Steamboat Mountain ACEC and addition of the Steamboat Mountain Management Area would also reduce effects on big game habitats because they would control surface disturbing and disruptive activities in the most concentrated area of crucial winter range and parturition area overlap and the basin big sagebrush/lemon scurfpea plant community, which is important for big game parturition. Disturbances (e.g., excavation) could have locally significant impacts on small animals (e.g., pygmy rabbits,) occupying those areas.

4.5 HERITAGE RESOURCES

Heritage resources are relatively scarce, nonrenewable resources whose values can be easily diminished by physical disturbances. Resources include cultural and historic trails and sites, archaeological sites, Native American respected places, unique geological features, and paleontological sites.

4.5.1 Potential Impacts on Heritage Resources

Management of heritage resources could have environmental impacts on resources and nonenvironmental effects on resource users. Impacts on resources and resource users that might result from implementation of the heritage resource program are discussed in those particular resource sections. This section describes potential impacts on heritage resources resulting from the implementation of management actions for other resource management categories.

The criteria used to determine the significance of impacts on heritage resources include effects on NRHP eligibility, future research potential, and (in some cases) effects on the resources' suitability for religious or traditional uses. An impact would be significant if it resulted in the physical alteration, destruction, or loss of a resource listed or determined eligible for listing on the NRHP, or considered important to Native American groups. To be considered significant, resources must meet one or more of the criteria for inclusion on the NRHP. The impact of an action would be beneficial if it protected or improved public appreciation of heritage resources.

For analysis purposes, it is assumed that the overall density of archaeological sites in the planning area would be approximately 3.2 sites per 640 acres (one section), and that about one-third of the sites would prove to be significant in terms of NRHP criteria. This density is based on less than 5 percent of the planning area's having been inventoried at a Class III level intensity. This sample is recognized to be very low and potentially misleading. The BLM also recognizes that areas with site densities as high as 15 sites per section have been found elsewhere in the Green River Basin.

4.5.1.1 Common to All Alternatives

Direct impacts on heritage resources would be from surface disturbing activities and soil compaction, whereas indirect impacts could occur as a function of increased erosion, easier access, vibration from vehicles and equipment, or alteration of the setting associated with certain heritages resources. Indirect impacts could also occur if heritage resources lost potential information, integrity, and cultural value as a result of disturbances.

Federal regulations require inventory, recordation, and evaluation of resources in the area of potential effect as part of the approval process for any surface disturbing activity. BLM prefers to avoid all effects on significant heritage resources. BLM would use GIS and other technologies to place surface disturbing activities in areas where they would be least intrusive to heritage resource values.

When avoidance is not possible, several mitigation measures could be applied to lessen the effects on heritage resources. Mitigation measures common to all alternatives include data recovery in the case of archaeological sites that are important because of the scientific information they contain. Mitigation might also include interpretive efforts, which would improve the public's ability to appreciate the resource in nearby areas. Data recovery and interpretation could have a beneficial effect for the public, because these efforts increase understanding and appreciation of our shared heritage. In some cases, interpretation and other measures that improve the public's ability to enjoy and appreciate heritage resources might also be appropriate.

Resources discovered during implementation of an undertaking would be documented and evaluated for eligibility for the NRHP, and mitigation, such as data recovery, site stabilization, or other appropriate measures, would be implemented to ensure protection of resource values. Sites not eligible for the NRHP would be managed on a case-by-case basis according to their values. The State Historic Preservation Office (SHPO) would be consulted under provisions of the National Historic Preservation Act, as implemented in the BLM-SHPO Protocol, on any potential effects on heritage resources (Appendix 7).

Native American traditional elders have identified a number of sites important for their traditional, sacred, or religious uses by Native peoples. Elders in this region have referred to these sites as "respected places." Surface disturbance and disruptive activities have the potential to affect these respected places and their associated viewsheds. These types of heritage resources differ from more typical archaeological and historical sites because of their sacredness to Native Americans and because adverse effects on the resources cannot be mitigated by recovery of scientific information. Federal mandates encourage BLM to protect these places and to make accommodations to allow their use by Native American traditional people to the extent possible within the bounds of other appropriate regulations.

The significance of any adverse impact would depend on the importance of the resource (e.g., its eligibility for NRHP inclusion) and implementation of mitigation measures. On rare occasions, heritage resources might be of such importance that their protection might preclude other kinds of activity. Federal land users could be adversely affected if a proposed activity were not approved or would require modification to the extent the activity became economically infeasible.

Examples of heritage resources of unique significance within the planning area include the region of stabilized sand/silt sheet deposit north and west of White Mountain. This area, referred to as the paleosol deposition area, has very intact manifestations of some of the earliest cultures in North America, as exemplified by the Finley and Krmpotich sites. These sites include preserved cultural materials and Pleistocene and early Holocene faunal remains. These sites are tremendously important for the study of past environmental conditions and their effects on human adaptation over thousands of years. Surface disturbance would be controlled so as to manage the area to protect scientific values.

Paleontological resources are known in the planning area. Before surface disturbing activities, BLM would classify or rank the area according to its potential for containing significant fossils or noteworthy occurrences of invertebrate or plant fossils. Documented or located significant fossil sites would be avoided to protect scientific and educational values. If impacts could not be avoided, the site would be evaluated and surveyed (as needed) by a professional paleontologist. A mitigation plan, which could include activity monitoring, fossil documentation, recovery, and storage in a federally approved repository, would be coordinated with BLM before any surface disturbing activity could occur.

Fire suppression efforts would have beneficial effects by protecting standing historic structures; however, the use of heavy equipment and resulting surface disturbance could have adverse effects by disturbing the soil matrix, which could contain archaeological or historical resources. Fire retardant chemicals would not be allowed in the vicinity of rock art sites and some historic structures to protect their historic integrity. Fire changes the visual appearance of an area and thus could have short-term adverse effects on the historic setting of places, such as the South Pass Historic Landscape. On the other hand, fire was part of the natural ecosystem, and burning often restores a more natural landscape, which would have a beneficial effect on historic settings.

Actions associated with managing the wild horse program usually would not have any adverse impact on heritage resources. Consultation with tribal elders indicates that the presence of wild horses on BLM-administered lands is important to Native Americans. This is also illustrated by the images of horses in the Native American rock art at the White Mountain Petroglyphs sites. For these reasons, wild horses could almost be considered a heritage resource, and their appropriate management would represent a beneficial effect on traditional values.

Land exchanges and ownership adjustments could have an adverse effect on heritage resources located on the affected parcels. Resources could become vulnerable to impacts because historic preservation laws and procedures, such as inventory and avoidance, generally apply only to lands under federal jurisdiction. Changes in ownership could significantly alter land management practices. The State of Wyoming does not have extensive state laws protecting heritage resources; thus, land exchanges with the state could be adverse because of removal of the property from the protection of the National Historic Preservation Act and other federal laws. In addition, public access to important heritage resources could be adversely affected if access through privately owned land were precluded or made more difficult. Inventories and evaluations for heritage resources would be required prior to transferring lands from federal jurisdiction.

This would ensure adequate data recovery and documentation of the resource to minimize any adverse effect associated with the transfer and loss of federal protection.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development could adversely affect heritage resources. Land clearing and grading activities necessary for construction remove vegetation, excavate and compact soils, and contribute to increased erosion that could expose buried archeological sites. Federal regulations require inventory, recordation, and evaluation of heritage resources in the area of potential effect as part of the approval process for any surface disturbing activity. Adverse impacts on heritage resources discovered during construction activities would be minimized by relocating the activity to avoid the resources or through proper mitigation if disturbance or destruction could not be avoided.

Special management area designations and associated management prescriptions, including ACECs, WSAs, and National Historic or Scenic Trails, would provide protection to heritage resources by limiting or controlling surface disturbing activities. These resources include a portion of the Killpecker Sand Dunes, White Mountain Petroglyphs, South Pass National Historic Landmark (including the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails), Boars Tusk, Crookston Ranch, and Tri-Territory Marker.

4.5.1.2 No Action Alternative

Heritage resources would remain protected through special management area designations (e.g., WSAs, National Historic Trails) and associated management prescriptions. These resources include a portion of Killpecker Sand Dunes, White Mountain Petroglyphs, South Pass Historic Landscape (including the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails), Boars Tusk, Crookston Ranch, and Tri-Territory Marker. Other areas could be included in the future as further NRHP-eligible sites are located and/or special management designations are considered.

Sites eligible for inclusion in the NRHP because of their scientific value would be protected. Preservation of the scientific information would be the preferred mitigation method if any such sites had to be affected by other activities. These sites include the Finley, Krmpotich, and Eden-Farson archaeological sites in the paleosol deposition area. Other sites will be included as they are located, recorded, and evaluated for NRHP eligibility.

Management actions associated with watershed quality, livestock grazing, wildlife, and vegetation would generally have indirect but beneficial impacts on heritage resources. Implementing the Wyoming Standards for Healthy Rangelands, meeting PFC standards, taking measures to achieve DPC objectives, and controlling or preventing surface disturbing activities in sensitive wildlife habitat would all contribute to improved range conditions, soil and vegetation stability, and decreased soil erosion.

Overuse of an area by livestock, wildlife, and/or wild horses could accelerate erosion and thus destroy the soil matrix, which might contain archaeological or historical resources. The wildlife management practices of imposing seasonal restrictions on OHV use within the greater sage-grouse nesting habitats could benefit the protection of historical resources through prevention of soil erosion. Proper construction of water developments and range improvements, and proper placement of salt and mineral supplements would help minimize adverse impacts on heritage resources. Areas would be inventoried and evaluated for heritage resources before any disturbance associated with the construction of fences, water developments, and range improvements, and appropriate mitigation measures would be implemented if needed. The amount of surface disturbance anticipated for such activities would not be significant and, based on the assumed densities of heritage resources, the likelihood of encountering previously unknown sites would be negligible.

Rock art sites and significant historic structures, such as those at Crookston Ranch, would be fenced to protect them from livestock and wildlife.

Management of travel and access could adversely affect heritage resources by facilitating access and use within the planning area. Heritage resources would be affected through direct human disturbance and, potentially, by unauthorized OHV use. However, providing for appropriate ingress, egress, and access routes through effective transportation planning would help reduce related impacts. In addition, limiting OHV use to existing roads and trails, and implementing seasonal limitations would minimize soil disturbance, thus helping prevent exposure of buried archaeological sites.

Heritage resources such as Boars Tusk, Crookston Ranch, and White Mountain Petroglyphs would be closed to OHV use to protect their scenic qualities and historic values.

Geophysical exploration activities could affect heritage resources through direct disturbance of such resources. Preauthorization inventory and avoidance would usually allow the geophysical operation to be conducted in a way that avoided effects on most heritage resources.

Approximately 1,800 acres of new surface disturbance could occur over the planning period as a result of projected oil and gas development activities (Appendix 13, Table A13-7). At the assumed densities for heritage sites of 3.2 sites per 640 acres, approximately 13 sites could potentially be affected. Other types of ROWs, such as communication sites and ROWs for salable minerals, could result in surface disturbances and effects to the setting of sites such as Native American respected places. ROWs proposed in proximity to Indian Gap, Monument Ridge, White Mountain, and the face of Steamboat Mountain, and around Native American respected places could have adverse impacts on these resources and would be avoided to the extent possible.

Withdrawals identified in the Green River Resource Management Plan (RMP) would be pursued. Withdrawing lands from locatable mineral development and revoking existing withdrawals would have impacts on the resources and resource users. The oil shale and coal classifications would be revoked and, upon revocation, the planning area would be open to filing of mineral claims, exploration, and development of locatable minerals. White Mountain Petroglyphs, Greater Sand Dunes ACEC, special status plant sites, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit would be withdrawn from mineral location before the revocation of the oil shale and coal classifications.

Preauthorization inventory and evaluation are not always required before some mining operations conducted pursuant to the 1872 Mining Act; thus, surface disturbance associated with mining claims could have the potential to destroy archeological and historical resources and affect historic settings such as the South Pass Historic Landscape. However, it is anticipated that fewer than 100 acres within the planning area would be disturbed over the planning period because of locatable mineral activity; thus, any adverse impact would likely be minimal. Where mining activities would disturb more than 5 acres of land, a plan of operations and a resource evaluation would be required. These measures would minimize potential impacts on heritage resources. A plan of operations would also be required for mining operations in ACECs, which would discuss project details relative to those areas.

Recreational management actions, such as implementation of public education and interpretive programs, would have beneficial effects by encouraging protection of heritage resources. The preparation of recreation project plans for the National Historic Trails, Crookston Ranch, Boars Tusk, and White Mountain Petroglyphs would benefit the users of these resources by providing interpretive materials on historical and cultural sites of interest. An inventory and evaluation of potential heritage resources would be completed before the expansion of facilities at the Sand Dunes OHV recreation site, minimizing the potential for any adverse impact on previously unknown resources. The projected increase in recreation use of the planning area could have the potential to affect heritage resources. Any area that experienced increased recreational use would be closed if significant resource damage were observed. Some seasonal limitations on OHV use might restrict recreational use and therefore benefit heritage resources; however, these benefits would be limited because of the temporary nature of such restrictions.

Management of visual resources could have beneficial effects through the protection of viewsheds associated with historic resources, such as the National Historic Trails in the South Pass Historic Landscape, and sites of concern to Native Americans, such as White Mountain Petroglyphs. The Visual Resource Management (VRM) Class II designation for these locations would require structures and activities to be designed to retain the existing character of the landscape. Any Native American respected places located within VRM Class I or II areas could be adversely affected if noticeable changes to the landscape occurred. Consultation with Native American elders would help identify alternative measures to minimize impacts.

Management actions for special management areas would usually benefit heritage resources. Limitations on surface disturbing activities and other development, including communication sites, would help protect heritage resources from physical and visual impacts. Maintaining the South Pass Historic Landscape viewshed for approximately 3 miles in either direction from the National Historic Trail would have beneficial effects for recreation users of the trails and for the integrity of the historic resource. However, other resource users within the viewshed could be adversely affected. Use of GIS technologies to analyze the setting of the National Historic Trails through South Pass would assist in maximizing multiple use in the South Pass area while still protecting this historically significant viewshed. Allowing communication sites on Essex Mountain and Pacific Butte could have adverse effects on visual resources, particularly in areas identified as respected places by Native Americans. Application of GIS technologies to analyze visual settings could help maximize all uses in these areas while still protecting settings important to Native Americans.

4.5.1.3 Alternative 1

Heritage resources would remain protected through special management area designations (e.g., WSAs, National Historic Trails) and associated management prescriptions. These resources include a portion of Killpecker Sand Dunes, White Mountain Petroglyphs, South Pass Historic Landscape (including the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails), Boars Tusk, Crookston Ranch, and Tri-Territory Marker. Other areas could be included in the future as additional NRHP-eligible sites and/or special management prescriptions are considered.

Sites that are eligible for inclusion in the NRHP because of their scientific value (Appendix 7, Heritage Resources) would be protected. Preservation of scientific information would be the preferred mitigation method if any such sites had to be affected by other activities. These sites include the Finley, Krmpotich, and Eden-Farson archaeological sites and the paleosol deposition area. Many other significant archeological sites are located in the planning area, and it is anticipated that still more will be discovered during the life of this plan. As sites are located, they will be recorded and evaluated for NRHP eligibility. These provisions will apply to all sites determined to be eligible under Criterion D (Appendix 7).

Management actions associated with watershed quality, livestock grazing, wildlife, and vegetation would generally have beneficial impacts on heritage resources, similar to those under the No Action Alternative. The level of development activity and AUM use is expected to be greater under this alternative; thus, there would be greater potential for impacts on heritage resources. However, impacts would remain insignificant because of implementation of management tools to improve range conditions, improve soil and vegetation stability, and decrease soil erosion, and through mitigation measures to inventory, evaluate, avoid, or protect heritage resources.

Under this alternative, recreation management actions would have impacts similar to those under the No Action Alternative. Interpretive materials on the importance of protecting and preserving heritage resources would be prepared as necessary, including recreation project plans for the National Historic Trails, Crookston Ranch, Boars Tusk, and White Mountain Petroglyphs. This would benefit the users of these resources by providing interpretive materials on historical and cultural sites of interest. The Sand Dunes OHV recreation site would not be expanded; thus, inventory and evaluation of archeological resources would not be required. However, an indirect adverse impact could be anticipated if OHV use increased outside the recreation site because of lack of available open area for users. The projected increase in recreationists' use of the planning area could have the potential to affect heritage resources, but impacts would be minimized by closing popularly used areas if resource damage occurred. However, based on the assumed densities of heritage sites within the planning area, it would be unlikely that a significant impact would result.

Management of travel and access throughout the planning area could have adverse impacts on heritage resources similar to those under the No Action Alternative. The OHV designations would allow more travel on existing roads and trails, but significant adverse impacts would not be anticipated provided that users adhered to the designations. Heritage resources such as Boars Tusk, Crookston Ranch, and White Mountain Petroglyphs would remain closed to OHV use to protect their historical significance.

Geophysical exploration activities would be allowed throughout the planning area, subject to seasonal limitations and sensitive plant species locations. These activities could affect heritage resources, but preauthorization inventory and avoidance measures should minimize adverse impacts.

Surface disturbing activities associated with the construction and location of ROWs for pipelines, transmission lines, communication lines, roads, and oil and gas development activities could adversely impact heritage resources, much as they would under the No Action Alternative. Although additional land area would be available for ROWs, the potential for this impacting additional heritage resources would be small. Cultural resource inventory, recordation, and evaluation of heritage resources would be part of the approval process for any surface disturbing activity, and adverse impacts would be minimized by avoiding the resources or by proper mitigation if disturbance or destruction could not be avoided.

Approximately 2,100 acres of new surface disturbance could occur over the planning period for projected oil and gas development activities (Appendix 13, Table A13-7). At the assumed densities for heritage sites of 3.2 sites per 640 acres, approximately 15 sites could potentially be affected. Additional disturbance would be likely for other types of ROWs, such as alternative energy developments, communication sites, and mineral material sales, but the number of acres affected would not be so significant as to increase the number of potentially affected heritage sites. Any ROWs proposed in proximity to Native American respected places could have adverse impacts on these resources; therefore, ROWs would not be allowed within one-quarter mile of these places. As under the No Action Alternative, the significance of any adverse impact would depend on the significance of the resource and the implementation of mitigation measures.

The paleosol deposition area is of unique significance to the planning area because of its intact manifestations of some of the earliest cultures in North America, as exemplified by the Finley and Krmpotich sites. This area would be managed to protect scientific values, as under the No Action Alternative. The requirement for special testing strategies in this area would also help minimize the potential for impacting sites in this depositional regime.

The oil shale and coal classifications would be revoked, and upon this revocation, the planning area, with the exception of White Mountain Petroglyphs, would be open to the filing of mineral claims, exploration, and development of locatable minerals. This could have adverse impacts on heritage resources if the revocations resulted in significant increases in mining activity.

As under the No Action Alternative, preauthorization inventory and evaluation would not always be required before mining operations affecting fewer than 5 acres, conducted pursuant to the 1872 Mining Act. Surface disturbance associated with mining claims could have the potential to destroy archeological and historical resources and affect historic settings, such as the South Pass Historic Landscape. Although a majority of the planning area would be open for mineral location, fewer than 100 acres would be expected to be disturbed over the planning period because of available resources and demand for those resources. Thus, any adverse impact would likely be quite minimal.

Management actions for visual resources under this alternative could have adverse effects on protection of the visual quality of historic resources and Native American respected places. Most of the planning area would be classified as VRM Class IV, which would allow major modifications to the landscape character.

Although the management actions for special management areas would benefit heritage resources, this alternative would reduce the land area receiving these protections by removing the ACEC designation from Steamboat Mountain. Limitations on surface disturbing activities and other development would help protect heritage resources from physical and visual impacts, but allowing communication sites on Steamboat Mountain could adversely impact visual resources, particularly in areas identified as respected places by Native Americans. The South Pass Historic Landscape viewshed would be reduced to approximately 1 mile in both directions from the National Historic Trail. This could adversely affect both the users of the trail and the historic integrity of the South Pass area if surface disturbing activities and visual intrusions were to increase.

4.5.1.4 Alternative 2

Heritage resources would remain protected through special management area designations (e.g., WSAs, ACECs, and National Historic Trails) and associated management prescriptions. These resources include a portion of Killpecker Sand Dunes, Indian Gap, White Mountain Petroglyphs, South Pass Historic Landscape (including the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails), Boars Tusk, Crookston Ranch, and Tri-Territory Marker. Other areas could be included in the future as additional NRHP-eligible sites and/or special management designations are considered.

Management actions associated with watershed quality, livestock grazing, wildlife, and vegetation would generally have indirect but beneficial impacts on heritage resources, like those under the No Action Alternative. The additional protective measures for wildlife under this alternative could have beneficial effects on heritage resources by increasing the amount of area protected from surface disturbing activities.

Recreational management actions would have impacts similar to those under the No Action Alternative. Additional interpretive materials on the importance of protecting and preserving heritage resources would be prepared, including recreation project plans for the National Historic Trails, Crookston Ranch, Boars Tusk, White Mountain Petroglyphs, and Native American sites such as Indian Gap. The Indian Gap Trail would be researched and mapped, and an interpretive plan would be prepared. This would benefit users of these resources by providing educational materials on historical and cultural sites of interest. The Sand Dunes OHV recreation site would not be expanded; therefore, inventory and evaluation of archaeological resources would not be required (as under Alternative 1). However, an indirect adverse impact could be anticipated if OHV use increased outside the recreation site because of lack of available open area for users. This impact could also be influenced by the closure of OHV use in the greater sage-grouse winter range. Any adverse impacts on heritage resources due to ground disturbance from camping activities would be minimized and monitored through a permit program. Areas might be closed to OHV use if significant resource damage were observed.

Travel and access throughout the planning area could have adverse impacts on heritage resources similar to those under the No Action Alternative. However, impacts would be reduced through implementation of a transportation plan providing maximum protection of sensitive resources. Moreover, limiting OHV use to designated roads and trails and closing more areas to OHV use would minimize soil disturbance and compaction and thus minimize erosion that could expose previously unknown resources. Boars Tusk, Crookston Ranch, White Mountain Petroglyphs, the greater sage-grouse winter range, and the paleosol deposition area would be closed to OHV use to protect their uniqueness and sensitive resources.

Geophysical exploration activities would be excluded from a majority of the planning area; thus impacts on heritage resources would be avoided.

Surface disturbing activities associated with the construction and location of ROWs could adversely affect heritage resources in much the same way that they would under the No Action Alternative; however, because less land area would be available for ROWs, the potential for significantly impacting heritage resources would be low based on the assumed densities of sites within the planning area. Approximately 1,300 acres of new surface disturbance could occur over the planning period for projected oil and gas development activities (Appendix 13, Table A13-7). At the assumed densities for heritage sites of 3.2 sites per 640 acres, fewer than 10 sites could be affected. Any ROWs proposed in proximity to Indian Gap, Monument Ridge, White Mountain, the face of Steamboat Mountain, and Native American respected places could have adverse impacts on these resources and therefore would be avoided to the extent possible. Native American elders would be consulted to determine the viewshed necessary to protect respected places from surface disturbing or disruptive activities. As with the other alternatives in this plan, inventory, recordation, and evaluation of heritage resources would be part of the approval process for any surface disturbing activity, and adverse impacts would be minimized by avoiding the resources or by appropriate mitigation if disturbance or destruction could not be avoided.

The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area. This area has intact manifestations of some of the earliest cultures in North America, as exemplified by the Finley and Krmpotich sites. Because of its importance to archeological science, the expanded ACEC would be evaluated as a research natural area (RNA). An RNA designation is for areas that contain important ecological and scientific values; these areas would be managed for minimum human disturbance. This designation would benefit this unique heritage resource by maintaining the area for the primary purpose of research and education.

The entire planning area would be withdrawn from the filing of mining claims, exploration, and development for locatable minerals (including recreational use), salable minerals, and coal exploration and development. This would have an overall beneficial effect on heritage resources by eliminating these surface disturbing activities.

Management actions for visual resources would benefit the visual quality of historic resources and Native American respected places. Most of the planning area would be classified as VRM Class I or II; thus, development would be designed to retain the existing character of the landscape.

The benefits to heritage resources from proposed actions for special management areas would be similar to those under the No Action Alternative. However, under this alternative, the benefits would be even greater because additional areas would be designated. Management prescriptions associated with ACEC expansion areas and greater sage-grouse winter range would provide protections to sensitive resources, including heritage resources. Limitations on surface disturbing activities and other development, including communication sites, would help protect heritage resources from physical and visual impacts. Increasing the South Pass Historic Landscape viewshed to 5 miles in both directions from the National Historic Trail would have beneficial effects for both the users of the trail and the historical integrity of the South Pass area. However, other users wanting to engage in development activities within the viewshed could be adversely impacted, as they would be under the No Action Alternative. Effects on those users would be greater under this alternative because larger areas would be managed more restrictively.

4.5.1.5 Alternative 3

Heritage resource sites eligible for the NRHP would be protected and managed in accordance with the National Historic Preservation Act and Archaeological Resources Protection Act (ARPA). Pursuant to the protocol agreement between BLM and the Wyoming SHPO (Appendix 7), sites eligible for inclusion in the NRHP because of their scientific information content would be surrounded by a 100-foot avoidance area. Expansion era roads and associated sites eligible for the NRHP would be protected from activities that would affect their NRHP eligibility status. Activities on the roads and sites may be limited on a case-by-case basis. Consideration would be given to nominating for listing the contributing portions of expansion era roads and associated sites eligible for the NRHP. This would have beneficial effects on both the heritage resources and the users of these resources.

Management actions associated with watershed quality, livestock grazing, wildlife, and vegetation would generally have beneficial impacts on heritage resources, similar to those of the No Action Alternative and Alternative 2. The additional protection measures for wildlife could have beneficial effects on heritage resources by increasing the amount of area protected from surface disturbing activities.

Recreation management actions would have impacts similar to those under Alternative 2. Interpretive materials on the importance of protecting and preserving heritage resources would be prepared. Indirect adverse impacts could be anticipated if OHV use increased outside the recreation site because of lack of available open area for users. Disturbance from camping activities would be minimized and monitored through a permit program to minimize any potential effect on previously unknown resources.

Travel and access throughout the planning area could have adverse impacts on heritage resources similar to those under the No Action Alternative. However, impacts would be slightly reduced under this alternative through implementation of a transportation plan that provides for maximum protection of sensitive resources. In addition, limiting OHV use to existing and designated roads and trails, limiting seasonal access, and closing some sensitive plant and wildlife areas would minimize soil disturbance and associated erosion that could expose previously unknown resources.

Geophysical activities could have adverse impacts on heritage resources, similar to those under Alternative 2. Impacts would be slightly greater under Alternative 3, however, because this type of activity would be excluded from fewer areas than under Alternative 2. Preauthorization inventory and avoidance measures would help minimize adverse impacts.

Potential adverse impacts on heritage resources from surface disturbing activities associated with the construction and location of ROWs would be similar to those under the No Action Alternative. However, less land area would be available for ROWs; thus, the potential for significant impacts on heritage resources would be minimal. Approximately 1,600 acres of new surface disturbance could occur over the planning period for projected oil and gas development activities (Appendix 13, Table A13-7). At the assumed densities for heritage sites of 3.2 sites per 640 acres, fewer than 12 sites potentially could be affected. ROWs would be avoided in areas in close proximity to Indian Gap, Monument Ridge, White Mountain, the face of Steamboat Mountain, and Native American respected places, providing a benefit to these resources. As with all of the management alternatives, inventory, recordation, and evaluation of heritage resources would be part of the approval process for any surface disturbing activity. Adverse impacts would be minimized by avoiding the resources, or by proper mitigation if disturbance or destruction could not be avoided.

The Greater Sand Dunes ACEC would be expanded to include the paleosol deposition area. This area has intact manifestations of some of the earliest cultures in North America, as exemplified by the Finley and Krmpotich sites, and warrants the added protection of the ACEC designation. Surface disturbing activities would be allowed only if appropriate archeological inventory, testing, and data recovery could ensure that there would be no adverse impacts on the resource.

The majority of the planning area would be open to the filing of mineral claims, exploration, and development of locatable minerals. This could have adverse impacts on heritage resources if significant increases in mining activity occurred. Surface disturbance associated with mining claims could potentially impact archeological and historical resources. Mining in the areas most likely to support mining activity (South Pass Summit and Steamboat Mountain) could also affect historic settings and Native American respected places. Therefore, those areas would be withdrawn from mineral location. Pursuant to the 1872 Mining Act, preauthorization inventory and evaluation would not be required before mining operations that would affect fewer than 5 acres (unless located in a special management area). However, no significant impacts would be expected because the available mineral resource with the most demand would be withdrawn. The White Mountain Petroglyphs would also be withdrawn from mineral location; thus, there would be no impact on this Native American rock art site.

Management of visual resources would have beneficial effects on the visual quality of historic resources and Native American respected places. Approximately two-thirds of the planning area would be classified as VRM Class I or II; thus, development would be designed to retain the existing character of the landscape. Native American respected places located with VRM Class IV areas could be adversely affected if noticeable changes to the landscape occurred. However, consultation with Native American elders would help identify alternative measures to minimize any impact.

Special management areas would benefit heritage resources because management prescriptions generally limit surface disturbing activities and other development, including communication sites. Management actions associated with expansion of existing ACECs and designation of additional ACECs would provide protections to sensitive resources, including heritage resources. Maintaining the South Pass Historic Landscape viewshed at 3 miles in both directions from the National Historic Trail would have beneficial effects on both the users of the trail and the historical integrity of the South Pass area. However, other resource users wanting to engage in development activities within the viewshed could be adversely impacted, as they would under the No Action Alternative.

4.5.1.6 Proposed JMH CAP

Direct impacts on heritage resources would be from surface disturbing activities and soil compaction, whereas indirect impacts could occur as a function of increased erosion, easier access, vibration from vehicles and equipment, or alteration of the setting associated with certain heritage resources. Impacts on heritage resources could include loss of scientific and historical information, integrity, and cultural value. Federal regulations require inventory, recordation, and evaluation of resources in the area of potential effect as part of the approval process for any surface disturbing activity. BLM prefers to avoid all effects on significant heritage resources. BLM would use GIS and other technologies to place surface disturbing activities in areas where they would be least intrusive to heritage resource values.

When avoidance is not possible, several mitigation measures could be applied to lessen the effects on heritage resources. Mitigation measures common to all alternatives include data recovery in the case of archeological sites that are important because of the scientific information they contain. Mitigation might also include interpretive efforts, which would improve the public's ability to appreciate the resource in nearby areas. Data recovery and interpretation could have a beneficial effect for the public because these efforts increase understanding and appreciation of our shared heritage. In some cases, interpretation and other measures that improve the public's ability to enjoy and appreciate heritage resources might also be appropriate.

Resources discovered during implementation of an undertaking would be documented and evaluated for eligibility for listing in the NRHP. Mitigation, such as data recovery, site stabilization, or other appropriate measures, would be implemented to ensure protection of resource values. Sites not eligible for the NRHP would be managed on a case-by-case basis according to their values. The SHPO would be consulted under provisions of the National Historic Preservation Act, as implemented in the BLM-SHPO Protocol, on any potential effects concerning heritage resources (Appendix 7).

Native American traditional elders have identified a number of sites that are important for their traditional, sacred, or religious uses by Native peoples. Elders in this region have referred to these sites as "respected places." Surface disturbance and disruptive activities have the potential to affect these respected places and their associated viewsheds. These types of heritage resources differ from more typical archeological and historical sites because of their sacredness to Native Americans, and also because adverse effects on the resources could not be mitigated by the recovery of scientific information. Federal mandates encourage BLM to protect these places and to make accommodations to allow their use by Native American traditional people to the extent possible within the bounds of other appropriate regulations.

The significance of any adverse impact would depend on the importance of the resource (e.g., its eligibility for NRHP inclusion) and the implementation of mitigation measures. On rare occasions heritage resources might be of such importance that their protection might preclude other kinds of activity. Federal land users could be adversely affected if a proposed activity were not approved or would require modification to the extent that it became economically infeasible.

Examples of heritage resources of unique significance within the planning area include the region of stabilized sand/silt sheet deposit north and west of White Mountain. This area, referred to as the paleosol deposition area, has very intact manifestations of some of the earliest cultures in North America, as exemplified by the Finley and Krmpotich sites. These sites include preserved cultural materials and Pleistocene and early Holocene faunal remains. The sites are tremendously important for the study of past environmental conditions and their effects on human adaptation over thousands of years. Surface disturbance would be controlled so as to manage the area to protect scientific values.

Paleontological resources are known in the planning area. The effects of surface disturbing activities such as soil erosion, compaction, and vibration, and allowing access into or adjacent to these sensitive areas, would impose adverse impacts on these sensitive resources. The impacts would most likely come from unauthorized access to the area or even from wildlife that could potentially damage sensitive geologic information. Before surface disturbing activities, BLM would classify or rank the area according to its potential to contain vertebrate fossils or noteworthy occurrences of invertebrate or plant fossils. Documented vertebrate fossil sites would be avoided to protect scientific and educational values. Fencing and signage might be used to mitigate open access to some extent, but if impacts could not be avoided, the site would be evaluated and surveyed (as needed) by a professional paleontologist. A mitigation plan, fossil documentation, recovery, and storage in a federally approved repository would be coordinated with BLM before any surface disturbing activity could occur.

Fire suppression efforts would have beneficial effects on heritage resources by protecting standing historic structures. However, the use of heavy equipment and the resulting surface disturbance could have adverse effects by disturbing the soil matrix, which could contain archeological or historical resources. Fire retardant chemicals would not be allowed in the vicinity of rock art sites and some historic structures to protect their historic integrity. Fire changes the visual appearance of an area and thus could have short-term adverse effects on the historic setting of places such as the South Pass Historic Landscape. On the other hand, fire was part of the natural ecosystem, and burning often restores a more natural landscape, which would have a beneficial effect on historic settings.

Actions associated with managing the wild horse program usually would not have any adverse impact on heritage resources. Consultation with tribal elders indicates that the presence of wild horses on BLM-administered lands is important to Native Americans. The heritage value of horses is also illustrated by the number of horses in the Native American rock art at the White Mountain Petroglyphs site. For these reasons, wild horses could almost be considered a heritage resource; thus, their appropriate management would have a beneficial effect on traditional values.

Management actions associated with watershed quality, livestock grazing, wildlife, and vegetation would generally have an indirect beneficial effect on heritage resources. Implementing the Wyoming Standards for Healthy Rangelands, meeting PFC standards, taking measures to achieve DPC objectives, and controlling or preventing surface disturbing activities in sensitive wildlife habitat would all contribute to improved range conditions, soil and vegetation stability, and decreased soil erosion.

Overuse of an area by livestock, wildlife, and/or wild horses could accelerate erosion, destroying the soil matrix, which could contain archeological or historical resources. Proper construction of water developments and range improvements, and proper placement of salt and mineral supplements, would help minimize adverse impacts on heritage resources. Areas would be inventoried and evaluated for heritage resources before any disturbance associated with the construction of fences, water developments, and range improvements, thus mitigating related impacts. The amount of surface disturbance anticipated for such activities would not be significant and, based on the assumed densities of heritage resources, the likelihood of encountering previously unknown sites would be negligible. Rock art sites and historic structures, such as those at Crookston Ranch, would be fenced to exclude livestock and wildlife.

Recreation management actions such as implementation of public education and interpretive programs could have significant beneficial effects through encouraging protection of heritage resources. Preparation of recreation project plans for the National Historic Trails, Crookston Ranch, Boars Tusk, and White Mountain Petroglyphs would benefit the users of these resources by providing interpretive materials on historical and cultural sites of interest. For example, the location of interpretive and directional signage along backcountry byways would be coordinated with state and local governments. The projected increase in recreational use of the planning area could have the potential to adversely affect heritage resources through increased soil compaction, vegetation removal, and subsequent erosion of archeological sites. Any area experiencing increased recreational use would be closed if significant resource damage were observed. An inventory and evaluation of potential heritage resources would be completed before the expansion of facilities, minimizing the potential for any adverse impact on previously unknown resources. However, based on the assumed densities of heritage sites within the planning area, it would be unlikely that a significant impact would result. Overall management plans for specific heritage resource areas would have significant beneficial effects on the physical integrity of the resource as well as for users of these resources.

Travel and access could adversely affect heritage resources by facilitating access and use within the planning area. Heritage resources would be affected through direct human disturbance and, potentially, unauthorized OHV use. However, providing for appropriate ingress, egress, and access routes through effective transportation planning would help reduce related impacts. In addition, limiting OHV use to existing roads and trails would minimize soil disturbance, thus helping prevent exposure of buried archeological sites. Heritage resources such as WSAs, Boars Tusk, Crookston Ranch, special status plant sites, the Oregon Buttes ACEC, the Pinnacles Geologic Feature, and the White Mountain Petroglyphs ACEC would be closed to OHV use to protect their scenic qualities and historic values. Impacts could be slightly less than under the No Action Alternative because of implementation of a transportation plan specific to the planning area, ROW avoidance areas within the greater sage-grouse nesting habitat, and the Pinnacles Geologic Feature ROW exclusion area. Again, management of access in these areas would benefit heritage resources as well as natural resources of all kinds.

Geophysical exploration activities could adversely affect heritage resources. However, preauthorization inventory and avoidance could usually allow the geophysical operation to be conducted in a manner that would avoid effects on most heritage resources.

Land exchanges and ownership adjustments could have an adverse effect on heritage resources located on the affected parcels. Resources could become vulnerable to impacts because historic preservation laws and procedures such as inventory and avoidance generally apply only to lands under federal jurisdiction. Changes in ownership could significantly alter land management practices. Because the State of Wyoming does not have extensive state laws protecting heritage resources, land exchanges with the state could have adverse effects through removal of the property from the protection of the National Historic Preservation Act and other federal laws. In addition, public access to important heritage resources could be adversely affected if access through privately owned land were precluded or made more difficult. Inventories and evaluations for heritage resources would be required before transferring lands from federal jurisdiction. This would ensure adequate data recovery and documentation of the resource to minimize any adverse effect associated with the transfer and loss of federal protection.

Surface disturbing activities associated with the construction of linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development could adversely affect heritage resources. Land clearing and grading activities necessary for construction remove vegetation, excavate and compact soils, and contribute to increased erosion that could expose buried archeological sites. Preauthorization inventory and avoidance would usually allow operations to be conducted in a way that would avoid effects on most heritage resources. As with all of the alternatives, federal regulations would require inventory, recordation, and evaluation of heritage resources in the area of potential effect as part of the approval process for any surface disturbing activity. Adverse impacts on heritage resources discovered during construction activity would be minimized by relocating the activity to avoid the resources, or through proper mitigation if disturbance or destruction could not be avoided.

As under Alternative 3, approximately 1,600 acres of new surface disturbance is anticipated over the planning period for projected oil and gas development activities (Appendix 13, Table A13-7). At the assumed densities for heritage sites of 3.2 sites per 640 acres, approximately 13 sites could potentially be affected. These impacts could be reduced in Area 3 (Figure A17-1) of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17). The majority of Area 3 would be closed to new oil and gas leasing, which could result in fewer disturbances of heritage resources in this area. Over the long term, impacts in Area 3 would be minimized because all leases in this area would expire within an 11-year time period. Other types of ROWs, such as communication sites and salable minerals operations, could result in surface disturbance and effects on the setting of sites, such as Native American respected places. Any ROWs proposed in proximity to Indian Gap, Monument Ridge, White Mountain, the face of Steamboat Mountain, and Native American respected places could have adverse impacts on these resources and thus would be avoided to the extent possible.

Proposed withdrawals from locatable minerals identified in the Green River RMP would be pursued. Withdrawing of lands from locatable mineral development and revoking existing withdrawals would have beneficial impacts on heritage resources and resource users. Any mineral withdrawals would benefit heritage resource management by preventing vegetation removal, soil erosion and compaction, and vibration of significant heritage resources. The White Mountain Petroglyphs, Greater Sand Dunes ACEC, special status plant sites, Crookston Ranch, public water reserves, Tri-Territory Marker, Pinnacles Geologic Feature, and South Pass Summit would be withdrawn from mineral location before revocation of the oil shale and coal classifications. Preauthorization inventory and evaluation are not always required before some mining operations conducted pursuant to the 1872 Mining Act; thus surface disturbance associated with mining claims could have the potential to destroy archeological and historical resources and affect historic settings, such as the South Pass Historic Landscape. Where mining activities would disturb more than 5 acres of land, a plan of operations and a resource evaluation would be required. These measures could minimize potential impacts on heritage resources. A plan of operations would also be required in special management areas, which also would minimize the potential impact on heritage resources.

Management of visual resources could have beneficial effects through the protection of viewsheds associated with historic resources (e.g., South Pass Historic Landscape), and Native American sites (e.g., White Mountain Petroglyphs). The VRM Class II designation for these locations would require that structures or activities be designed to retain the existing character of the landscape. Native American respected places located within VRM Class I or II areas could be adversely affected if noticeable changes to the landscape occurred. Consultation with Native American elders would help identify alternative measures of minimizing impacts.

Special management area designations and associated management prescriptions, including ACECs, WSAs, and National Historic or Scenic Trails, would provide protection to heritage resources by limiting or controlling surface disturbing activities. These resources include a portion of Killpecker Sand Dunes, White Mountain Petroglyphs, South Pass National Historic Landmark (including the Oregon, California, Mormon Pioneer, and Pony Express National Historic Trails), Boars Tusk, Crookston Ranch, and Tri-Territory Marker. Appropriate limitations on surface disturbing activities and other developments, including communication sites, would help protect heritage resources from physical and visual impacts. For example, communication sites would be prohibited in the Steamboat Mountain ACEC but would be considered on Essex Mountain and Pacific Butte, provided that appropriate mitigation measures could be implemented to meet VRM prescriptions. Maintaining the South Pass Historic Landscape viewshed at approximately 3 miles in each direction from the center of the National Historic Trail would also have beneficial impacts on both the users of the trail and the historic integrity of the historic trails setting. However, other resource users wanting to engage in development activities within the viewshed could be adversely affected.

4.6 TRAVEL, ACCESS, AND REALTY

This resource management category includes the land use programs of transportation, OHV use, lands and realty management, ROWs, and access routes and issues.

4.6.1 Potential Impacts on Travel, Access, and Realty

The land use programs of travel, access, and realty have environmental impacts on resources, and nonenvironmental effects on resource users. Impacts on resources and resource users resulting from implementation of these programs are discussed in those particular resource sections. This section describes potential impacts on the land use programs of travel, access, and realty resulting from the implementation of management actions for other resource management categories.

An impact would be considered significant if the implementation of management actions would compromise public health and safety, limit reasonable public access and use of the planning area, cause economic hardship for developers, and/or have adverse effects on state or private inholdings.

For analysis purposes, it is assumed that the majority of ROW locations are the result of development in the area. Exchanges of public land for state lands in sensitive resource areas would be pursued, and access to state and private inholdings would be maintained.

4.6.1.1 Common to All Alternatives

For the area of travel, access, and realty, the management actions associated with the alternatives would primarily affect where and when access to and travel within the JMH CAP planning area would be allowed, and where ROWs and other realty actions would be permitted. The limitations placed on travel, access, and realty management and related users would depend on locations of sensitive resources and measures used to protect those resources.

Management of water, vegetation, and wildlife resources would place restrictions on access, travel, and realty actions within the planning area, thereby impacting related users. Such restrictions could affect OHV use, general travel within the planning area, access to remote locations, ROW developments, land exchanges, and other realty actions. Impacts are not expected to be significant because many of the restrictions designed to protect land and water resources are implemented on a seasonal basis. ROW windows have been identified in the Green River RMP for areas outside the JMH CAP planning area that provide opportunities for placement of major transmission facilities.

Land adjustments and exchanges identified in the Green River RMP would be pursued, including exchange of state lands within WSAs and other special management areas. Acquiring state inholdings and other lands would likely result in beneficial impacts on travel, access, and realty management because BLM could implement cohesive management practices and reduce fragmentation of the planning area. Similar benefits could occur to the state or private party receiving lands in the exchange. Certain lands (e.g., areas with wetland and riparian habitat) would not be considered for disposal unless exchanged for lands of equal or better value (including functional resource value and monetary value). Mineral development activities would generally benefit and increase travel and access within the planning area through the development of additional roads needed to access drilling locations. However, such development could create health and safety risks to OHV users if pipelines became exposed in areas of shifting sand, which could have a significant adverse impact on users.

Visual resources management would adversely impact travel, access, and realty management by imposing restrictions on surface use and surface occupancy via VRM classifications, which serve to retain the existing character of the landscape. These restrictions could affect OHV use, general travel within the planning area, ROW developments, and other realty actions. Specifically, restrictions related to VRM classifications could increase project costs related to ROW developments and geophysical activities. An impact would be significant if a project were abandoned because expected costs outweighed projected benefits.

4.6.1.2 No Action Alternative

Management actions designed to protect water, vegetation, and wildlife resources would generally have adverse effects on travel, access, and realty management. Such actions include limitations on surface disturbing and disruptive activities in the form of designated avoidance areas, surface use stipulations, and specific mitigation measures. The area within 500 feet of riparian areas and wetlands, areas containing highly erodible soils, potential habitat for and known locations of special status species, and other sensitive wildlife habitat would all be subject to surface disturbance restrictions, which would place limitations on access and use within the planning area and could increase costs to the permittee.

Transportation planning would result in beneficial impacts on travel, access, and realty management by providing for appropriate ingress, egress, and access routes that would follow BLM guidelines and the road classifications defined in the Green River RMP (Appendix 12). Arterial roads would be high-traffic-volume roads that would provide primary access to the planning area; collector roads would provide access to large blocks of land; local roads would serve smaller areas; and resource roads would provide access to resource locations. Implementing OHV use designations and related seasonal closures would affect users by limiting travel within the planning area. However, impacts are expected to be minimal because existing and designated roads and trails provide adequate vehicle access throughout the planning area.

Geophysical activities would be required to conform to OHV use designations for minimizing adverse impacts on vegetation and other sensitive resources. This would affect applicants because of the nature of exploration activities. Limiting exploration activities to existing roads and trails could keep applicants from exploring in a grid pattern, and therefore could make it uneconomical to conduct exploration if portable techniques could not be used.

Areas that excluded or limited ROWs would cover approximately one-third of the planning area under this alternative. Applicants for ROWs would have to avoid another 30 percent of the planning area or apply additional mitigation to protect sensitive resource values. Such limitations could create increased costs and have an adverse economic impact on applicants by requiring a longer route to avoid these areas. This, in turn, could create additional surface disturbances, which could require additional mitigation and funds to construct the longer route. Moreover, construction would be subject to seasonal limitations in approximately half of the planning area, which could affect the timing (and therefore the cost) of ROW developments. An impact would be significant if a project were abandoned because the expected costs outweighed the benefits of acquiring the ROW.

4.6.1.3 Alternative 1

Management actions for water, vegetation, and wildlife resources would be less restrictive under this alternative, which would reduce adverse impacts on travel, access, and realty management compared with the No Action Alternative. Reducing the avoidance area around wetlands and riparian areas to 250 feet, limiting protections to special status plant and wildlife species, and eliminating surface disturbance restrictions in big game winter range and birthing areas would result in an increased level of access and use within the planning area.

As under the No Action Alternative, transportation planning would result in beneficial impacts on travel, access, and realty management by providing for appropriate ingress, egress, and access routes. OHV use designations would be less restrictive to users because fewer areas would be limited to designated roads and trails or have seasonal access limitations. This would increase access to existing roads and trails, thereby increasing the amount of area available to OHV users.

Geophysical activities would not be subject to OHV use designations, as required in the No Action Alternative. Geophysical activities would be allowed throughout the planning area, subject to seasonal limitations and sensitive plant species locations. This would reduce adverse impacts because users would be able to conduct economical exploration activities generally in a grid design and by portable techniques as necessary.

Applicants would have greater flexibility and opportunity for locating and routing ROWs than they would under the No Action Alternative. Placement of ROWs would be limited in areas designated as NSO, in exclusion or avoidance areas, by seasonal limitations, and by VRM classifications. Impacts on users would likely be less than under the other alternatives, because more land area would be available for ROWs.

Of the five alternatives, this alternative would provide the greatest level of mineral development, resulting in increased benefits to travel, access, and realty management compared with the other alternatives. Although existing roads and trails provide adequate vehicle access, anticipated development of existing and new leases would likely create additional access routes for users of the planning area. However, increased oil and gas development could create health and safety risks to OHV users if pipelines became exposed in areas of shifting sand, which could have a significant adverse impact on users.

Restrictions on surface use and surface occupancy imposed by VRM classifications would be least restrictive under this alternative. VRM Class II and III areas would be reduced in size, and VRM Class IV areas would increase by at least 120,000 acres over the other alternatives (Table 4-1 and Map 25). This would reduce related impacts on OHV use, travel within the planning area, ROW developments, and other realty actions.

4.6.1.4 Alternative 2

Management actions for water, vegetation, and wildlife resources would be more restrictive under this alternative, which would increase adverse impacts compared with the No Action Alternative. Increasing the avoidance area around wetlands and riparian areas to one-quarter mile, increasing protections to special status plant and wildlife species, and increasing surface disturbance restrictions in big game birthing areas would result in increased restrictions on travel, access, and realty management, thereby reducing the level of access and use within the planning area.

Transportation planning under this alternative would provide for appropriate access routes to provide maximum protection for crucial habitats and sensitive resources. This would limit access and could close roads in the planning area. Implementation of such a transportation plan could have significant adverse impacts on users if areas were no longer accessible by vehicles, and travel time would increase because more direct routes would not be available. Travel management plans would be developed in conjunction with transportation planning efforts to control development within Steamboat Mountain ACEC, White Mountain, the two northern birthing areas, and Essex Mountain. This could adversely affect users if access distance became too lengthy or costly, or was eliminated entirely, which could effectively preclude development.

OHV use designations would be more restrictive under this alternative, closing approximately 70 percent of the planning area because of sensitive or unique resources (Map 30). Moreover, the facilities at the Greater Sand Dunes Recreation Area would not be expanded or improved. This would adversely affect OHV users because much of the planning area would not be accessible by vehicle, and users would have to travel farther to access certain locations. This could also deter OHV use in the planning area, which could lessen the health and safety risks posed by oil and gas development. Geophysical activities would be excluded from areas with NSO requirements and areas with sensitive or unique resource values. This could result in significant adverse impacts on users because these designations encompass much of the planning area, leaving a limited amount of area for geophysical activities. Seasonal limitations would also apply to these activities, further affecting exploration operations.

Placement of ROWs would be limited in areas with sensitive or unique resources; seasonal limitations; and NSO, exclusion, or avoidance stipulations, which cover a majority of the planning area. This would provide extremely limited opportunities for locating and routing ROWs through the planning area. Impacts on users would be significant because it would likely be uneconomical to locate a ROW through much of the planning area with adequate mitigation or while avoiding sensitive resources.

This alternative allows the least amount of mineral development of the five alternatives, thereby decreasing benefits to travel and access opportunities. Decreased development of existing and new leases would result in forgone opportunities to develop additional access routes. However, decreased oil and gas development could reduce the health and safety risks to OHV users associated with exposed pipelines in areas of shifting sand.

Restrictions on surface use and surface occupancy imposed by VRM classifications would be the most restrictive under this alternative. Most of the planning area (over 400,000 acres) would be designated a VRM Class I area; there would be very few VRM Class III areas and no VRM Class IV areas (Table 4-1 and Map 36). This would increase related impacts on OHV use, travel within the planning area, ROW developments, and other realty actions.

4.6.1.5 Alternative 3

Management actions designed to protect water, vegetation, and wildlife resources would generally have adverse effects on travel, access, and realty management. Such actions include limitations on surface disturbing and disruptive activities (including OHV use) in the form designated avoidance areas, surface use stipulations, and specific mitigation measures. The area within 500 feet to one-quarter mile of wetlands and riparian areas, areas containing highly erodible soils, potential habitat for and known locations of special status species, and other sensitive wildlife habitat would all be subject to surface disturbance restrictions, which would place limitations on access and use within the planning area. Impacts would be slightly less than under the No Action Alternative because of moderate increases in restrictions on surface disturbing and disruptive activities.

Transportation planning would follow BLM guidelines and road classifications to provide maximum protection for crucial habitats and sensitive resources. This would limit access through seasonal road closures and/or gating to limit frequency of access in crucial wildlife habitat. Reroutes or rehabilitation of existing roads and trails could have significant adverse impacts on users if areas were no longer accessible by vehicle, travel time increased because more direct routes were not available, or construction and maintenance of roads to meet management objectives were more costly. A travel management plan would be developed specifically to manage access in the Steamboat Mountain and White Mountain areas. This could adversely affect users if access distance became too lengthy or costly. Implementing OHV use designations and related seasonal closures would affect users by limiting travel within the planning area. Such impacts would be slightly greater than under the No Action Alternative because more areas would be closed to OHV use and subject to seasonal limitations.

Geophysical activities would be excluded from areas with NSO requirements (Map 39) and sensitive or unique resource values, as under Alternative 2. Significant adverse impacts on users would be likely if these designations effectively precluded geophysical exploration activities; however, exceptions to these exclusions would be considered if adequate mitigation could be implemented. Seasonal limitations would also apply to these activities, further affecting exploration operations but not precluding them.

Applicants would have less opportunity to locate and route ROWs under this alternative than under the No Action Alternative. Placement of ROWs would be limited in areas with sensitive or unique resources through employment of seasonal limitations and by an increase in areas designated as VRM Class II (Map 47). Construction would be subject to VRM classifications and seasonal limitations in approximately half of the planning area, which could affect the amount of time needed to place utilities in ROWs. This could adversely affect users through increased project costs. An impact would be significant if a project were abandoned because the expected costs outweighed the benefits of acquiring the ROW. However, exceptions might be granted which would lessen this effect (Appendix 4).

The level of mineral development would be slightly less under this alternative than under the No Action Alternative, thereby decreasing benefits to access and travel. Decreased development of existing and new leases would result in forgone opportunities to develop additional access routes. However, decreased oil and gas development could reduce the health and safety risks to OHV users associated with exposed pipelines in areas of shifting sand.

Restrictions on surface use and surface occupancy imposed by VRM classifications would be more restrictive than under the No Action Alternative through designation of additional Class I and II areas (Table 4-1 and Map 47). This would increase related impacts on OHV use, travel within the planning area, ROW developments, and other realty actions.

4.6.1.6 Proposed JMH CAP

For the area of travel, access, and realty, the management actions associated with the Proposed JMH CAP would primarily affect where and when access to and travel within the JMH CAP planning area would be allowed, and where ROWs and other realty actions would be permitted. The limitations placed on travel, access, and realty management and related users would depend on the locations of sensitive resources and the measures used to protect those resources.

Management of water, vegetation, and wildlife resources would place restrictions on access, travel, and realty actions within the planning area, thereby impacting related users. Such restrictions could affect OHV use, general travel within the planning area, access to remote locations, ROW developments, land exchanges, and other realty actions. Management actions designed to protect water, vegetation, and wildlife resources would include limitations on surface disturbing and disruptive activities (including OHV use) in the form of designated avoidance areas, surface use stipulations, and specific mitigation measures. The area within 500 feet of wetlands and riparian areas, areas containing highly erodible soils, potential habitat for and known locations of special status species, and other sensitive wildlife habitat would all be subject to surface disturbance restrictions, which would place limitations on access to and use within the planning area. Management actions for greater sage-grouse habitat would be more restrictive than under the No Action Alternative, potentially increasing impacts on access, travel, and realty management. Impacts are not expected to be significant because many of the restrictions designed to protect land and water resources would be implemented on a seasonal basis. In addition, ROW windows have been identified in the Green River RMP for areas outside the JMH CAP planning that provide opportunities for placement of major transmission facilities.

Land adjustments and exchanges identified in the Green River RMP would be pursued, including exchange of state lands within WSAs and other special management areas. Acquiring state inholdings and other lands would likely result in beneficial impacts on travel, access, and realty management because BLM could implement cohesive management practices and reduce fragmentation of the planning area. Similar benefits could occur to the state or private party receiving lands in the exchange. Certain lands (e.g., areas with wetland and riparian habitat) would not be considered for disposal unless exchanged for lands of equal or better value (including functional resource value and monetary value).

Transportation planning would provide for appropriate access routes to provide maximum protection for crucial habitats and sensitive resources. Unlike the No Action Alternative, the Proposed JMH CAP would implement a transportation plan that could include mitigation measures (such as offsite placement of facilities, remote control monitoring, restricted or prohibited surface use, and concentration of pipelines and power lines) in areas subject to seasonal limitations and controlled surface use and NSO stipulations. This could limit access to and use within the planning area and could have significant adverse impacts on users if areas were no longer accessible by vehicles and travel time increased because more direct routes were not available. Moreover, travel management plans would be developed in conjunction with transportation planning efforts to control development within Steamboat Mountain, White Mountain, the two northern calving areas, and Essex Mountain. This could adversely affect users if access distance became too lengthy or costly, or was eliminated entirely, which could effectively preclude development. Implementing OHV use designations and related seasonal closures would impact users by limiting travel within the planning area. However, impacts would likely be minimal because existing and designated roads and trails would provide adequate vehicle access throughout the planning area. Geophysical activities would be allowed throughout the planning area, subject to appropriate mitigation and limitations applied to ROWs (Map 49) and measures to protect sensitive resources. Activities would not be allowed within one-half mile of the Pinnacles Geologic Feature or in areas of sensitive heritage resources and geologic features, such as Boars Tusk, White Mountain Petroglyphs, and historic trails. In addition, geophysical vehicles would not be allowed in areas closed to OHV use. Geophysical activities would be allowed in sensitive resource areas only if they could be performed with acceptable mitigation of impacts. Such restrictions would likely limit geophysical activities and thereby adversely impact users. However, exceptions to these limitations would be considered. To the extent possible, utility and transportation ROWs would be located to coincide with existing roads, trails, and other ROWs or easement concentration areas, where they would not create safety hazards or conflict with other resources and uses. Placement of ROWs would also be limited in exclusion and avoidance areas (Map 49). This could affect specific placement of ROWs and access to future development locations. Specific impacts could include logistical difficulties in using an existing road, trail, other ROW, and/or easement because of unfavorable geography, proximity, or presence of sensitive resources. The level of impact would depend on the location of existing roads, trails, other ROWs, and/or easements relative to the location objective of the user. Mitigation measures to alleviate this problem would include coordination of proposed leases with the overall transportation plan and individual travel management plans as applicable.

Mineral development activities would generally benefit travel and access within the planning area through the development of additional roads needed to access drilling locations. This would increase the level of access and travel opportunities within the planning area. However, mineral development activities could also create health and safety risks to OHV users if pipelines became exposed in areas of shifting sand, which could have a significant adverse impact on users. These impacts could be reduced in Area 3 (Figure A17-1) of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17). The majority of Area 3 would be closed to new oil and gas leasing, which would result in less well development and associated road construction. Over the long term, impacts in Area 3 would be minimized because all leases in this area would expire within an 11-year time period.

Visual resources management would adversely impact travel, access, and realty management by imposing restrictions on surface use and surface occupancy via VRM classifications, which serve to retain the existing character of the landscape. These restrictions could affect OHV use, general travel within the planning area, ROW developments, and other realty actions. Specifically, restrictions related to VRM classifications could increase project costs related to ROW developments and geophysical activities. An impact would be significant if a project were abandoned because expected costs outweighed the projected benefits. Although VRM classifications would differ slightly under this alternative compared with the No Action Alternative, the level of impact would be similar given that increases in VRM Class II areas would help offset increases in VRM Class IV areas under this alternative.

4.7 RECREATION RESOURCES

BLM-administered lands are managed to provide broad opportunities for many different types of recreation use. This resource management category includes dispersed recreation use and hunting.

4.7.1 Potential Impacts on Recreation Resources

The land use program for recreation resources has environmental impacts on resources and nonenvironmental effects (e.g., quality of recreation experience) on resource users. Impacts on resources and resource users resulting from implementation of recreation management actions are discussed in those particular resource sections. This section describes potential impacts on recreation resources or opportunities resulting from the implementation of management actions for other resource management categories.

An impact on recreation resources would be significant if an activity resulted in elimination of recreation use in any area, affected the user's experience, or would compromise public health and safety. Significant impacts would also occur if a level of development occurred that would prevent meeting the recreation objectives for the planning area or if activities occurred that would have a direct or indirect effect on wilderness suitability.

For analysis purposes, it is assumed that recreation activity levels would vary by alternative and would be related to how much recreation opportunity would be created or lost because of other projected development and activities. The specific assumptions for activity levels are presented in Section 4.12, Socioeconomics. Generally, dispersed recreation use is assumed to increase under each alternative, whereas OHV use is assumed to remain constant or to increase for a few years and then remain constant or decline slightly. New large-scale recreation facilities or developments would not be constructed during the planning period. Existing recreation facilities might be upgraded or improved. Hunting for elk is assumed to remain constant for all alternatives except Alternatives 1 and 2, for which the number of hunting days is expected to increase slightly in early years (because of dispersion of animals and decreased access) and to begin to decline in the later part of the planning period. Other big game hunting would remain constant. Greater sage grouse hunting is expected to decline under the No Action Alternative and Alternatives 1 and 3, as populations continued to decline, and to remain constant under Alternative 2 and the Proposed JMH CAP.

4.7.1.1 Common to All Alternatives

For recreation resources, the management actions associated with the alternatives would primarily affect where and when recreation use would be permitted within the planning area. The limitations placed on users of the planning area would depend on the location of sensitive resources and the measures used to protect these resources.

Management of land and water resources would not have significant impacts on recreation resources. These management actions generally limit the extent of surface disturbing activities or vegetation removal and provide for protection of habitat used by wildlife, which indirectly benefits the recreation user. Limitations on seasonal use of the planning area to protect sensitive plant and wildlife habitat would limit recreation use during certain times of the year; however, impacts on recreation users would not be significant because of the temporary nature of these limitations.

Heritage sites such as White Mountain Petroglyphs, National Historic and National Scenic Trails, Boars Tusk, Crookston Ranch, and Tri-Territory Marker contribute to the recreation resources of the planning area. Managing and protecting these heritage resources would directly benefit the resources and users of these resources. Protection of these resources, in addition to the development of interpretive sites for select areas, would enhance the recreation experience in the planning area.

4.7.1.2 No Action Alternative

Salt or mineral supplements for livestock would not be allowed within 500 feet of riparian habitat or National Historic and Scenic Trails. This would have a beneficial effect on recreation users by protecting riparian areas used for camping and fishing and by maintaining the cultural integrity of the trails.

The actions proposed for the management of wildlife would have impacts on recreation use because of the seasonal restrictions placed on OHV use within the greater sage-grouse nesting areas. However, impacts on recreation users would not be significant because of the temporary nature of these limitations.

The actions proposed for managing recreation resources would have beneficial impacts on both the resource and the user. The proposed development of recreation project and site plans and interpretive signs for the backcountry byways, historical sites, and viewing areas would represent a positive effect for the recreation experience and could increase the number of recreation visitor days for certain dispersed activities. Limitations on dispersed camping to protect riparian areas and protection measures associated with special recreation use permits would not significantly affect these uses.

Existing roads and trails provide adequate vehicle access in the planning area for recreation purposes. OHV designations would minimize adverse impacts on recreation resources by limiting disturbance to vegetation, watersheds, and wildlife; however, this could also impact OHV users through limitations on access and use within the planning area. Approximately 20 percent of the planning area would remain closed to OHV use. A recreation project plan would be developed to expand the parking area and facilities at the Greater Sand Dunes Recreation Area (i.e., OHV open area) to accommodate anticipated increases in OHV users and reduce user conflicts, thereby enhancing the recreation experience.

The construction of facilities and ROWs for pipelines, transmission lines, communication lines and towers, and oil and gas development could adversely affect recreation resources. Land clearing, grading, construction, and drilling activities would create dust, noise, and increased traffic. These activities could have adverse impacts on recreation uses because the activities would be visually and audibly apparent during the recreation experience. The significance of any impact for recreation users would depend on the proximity to the development. Users could be inconvenienced if ROW construction impeded access to recreation activities; however, any impact would likely not be significant because of the temporary nature of the construction. The visual intrusion of these developments would be site-specific and would not affect recreationists outside the viewshed of each facility.

The oil shale and coal classification would be revoked, and upon revocation, the planning area, with the exception of White Mountain Petroglyphs, Greater Sand Dunes ACEC, special status plant sites, Crookston Ranch, public water reserves, Tri-Territory Marker, and South Pass Summit, would be open for mineral location, having a beneficial effect on recreation users because additional locations would be available for recreational mining activities.

VRM classifications provide the planning mechanism for maintaining or improving scenic quality by managing the effects of human activities and other intrusions on the visual landscape. Implementation of these classifications would have beneficial effects on recreation resources and users by ensuring that surface disturbing activities would be compatible with the existing character of the landscape and that visual intrusions would not adversely affect the recreation experience. The existing landscape of recreation resources, including WSAs, 1-mile transition zones around WSAs, and ACECs, would be maintained or retained, thus having a beneficial impact on the recreation use of these areas.

Management prescriptions associated with special management areas, including ACECs, WSAs, and National Historic or Scenic Trails, would provide protection to recreation resources by limiting or controlling surface disturbing activities and development in these areas. This would have a beneficial impact on recreation users by minimizing incompatible uses in these areas and providing areas for solitude and primitive recreation opportunities.

4.7.1.3 Alternative 1

Salt or mineral supplements for livestock would not be allowed within 250 feet of riparian habitat and National Historic and Scenic Trails. This could have an adverse effect if areas frequented by recreationists for camping, fishing, and hiking were altered so as to impact the recreation experience.

The actions proposed for the management of wildlife within the greater sage-grouse nesting area would be less restrictive on recreation than those under the No Action Alternative. This is because the area under consideration is less extensive and because only areas under consideration that contain sagebrush would have restrictions on OHV use.

Like the actions under the No Action Alternative, the actions proposed for managing recreation resources under this alternative would have beneficial impacts on both the resource and the user. The proposed development of recreation project and site plans and interpretive signs for backcountry byways, historical sites, and viewing areas would represent a positive effect for the recreation experience and could increase the number of recreation visitor days for certain dispersed activities. However, potential conflicts between increased development activities and recreation uses in certain areas could have a long-term effect if recreation resources or the recreation experience were degraded such that visitor days declined. Limitations and requirements for dispersed camping and special recreation use permits would not significantly affect these uses.

Anticipated development would likely create additional access routes in the planning area that could be used by recreationists. The OHV designations would be less restrictive than those under the No Action Alternative because OHV use would be limited to designated roads and trails, or be subject to seasonal access limitations, in fewer areas. This could have adverse effects on users who preferred nonmotorized forms of recreation.

Leaseholders and applicants for ROWs would have greater flexibility in and opportunity for oil and gas development and location and routing of ROWs in the planning area than they would under the No Action Alternative. Construction and drilling activities would create more dust, noise, and traffic, which could have adverse impacts on recreation uses, than under the No Action Alternative. However, the significance of any impact on recreation resource users would depend on the proximity of the recreation activity to the development. There could be adverse impacts on recreation users if ROW construction impeded access to recreation activities, but any impact would be temporary and insignificant. Recreation users could be adversely affected by increased developments and surface disturbing activities' affecting the visual appeal of the area. The significance of any impact would be site-specific and would vary among recreationists because of the subjective nature of visual appeal and its influence on a recreation experience.

The development of roads and well facilities would result in more access to the planning area and potential loss and fragmentation of wildlife habitat, which could increase hunting pressure on wildlife. Projected increases in human activity from all types of users (i.e., industry workers, hunters, recreationists) could cause displacement of wildlife populations that support recreation activities such as hunting and wildlife viewing. The significance of any impact on recreation resources and resource users would depend on the extent to which recreation opportunity was reduced.

Although most of the planning area would be open to mineral location, areas of notable recreation importance, including White Mountain Petroglyphs, Crookston Ranch, Tri-Territory Marker, and South Pass Summit, would be withdrawn from filing of mining claims, exploration, and development. This would have a beneficial effect on recreation users by preventing or limiting surface disturbing activities associated with mining activities in these particular areas and by leaving the remainder of the planning area available for recreational mining use activities.

The VRM Class II classification would provide protection to recreation resources by limiting or controlling surface disturbing activities and development in the designated areas. This would benefit users by minimizing incompatible uses in these areas and providing areas for solitude and primitive recreation opportunities. However, the overall extent of beneficial impacts would be less extensive than under the No Action Alternative because there would be more land area designated as VRM Class IV, which could degrade the recreation experience.

The benefits of special management areas for recreation resources would be reduced under this alternative compared with the No Action Alternative, with the removal of the ACEC designation from Steamboat Mountain.

4.7.1.4 Alternative 2

Salt or mineral supplements for livestock would not be allowed within one-half mile of riparian habitat and National Historic and Scenic Trails. This would have a greater beneficial effect on recreation resources and users than would the corresponding provisions of the other alternatives, by ensuring protection of riparian areas used for camping and fishing and by maintaining the cultural integrity of the trails.

The proposed actions for the management of wildlife under this alternative would have greater impacts on recreation use than would those under the No Action Alternative and Alternative 1. The closure of more than 70 percent of the planning area to OHV use would create direct impacts by precluding access to these areas, as well as indirect impacts by directing heavier use to other locations within the planning area. At the same time, these restrictions would have a beneficial impact on other recreation users by minimizing incompatible uses in these areas and providing areas for solitude and primitive recreation opportunities.

Recreation resources and resource users would be expected to benefit from increased recreation planning. Recreation project and site plans and interpretive signs for backcountry byways, historical sites, and numerous viewing areas under this alternative would have greater beneficial effects on the recreation experience than would those under the No Action Alternative and Alternative 1 because plans would be prepared and implemented instead of developed on an as-needed basis as under the No Action Alternative and Alternative 1. Camping would be limited to designated areas, and activities and locations would be monitored through a permit program for parties of five or more to ensure that adverse impacts on other resources values would not occur. Special recreation use permits for managed activities proposed for the planning area would be reviewed and issued by the Rock Springs Field Office to monitor this type of activity and any potential impact on resources from such use. This could inconvenience outfitters and discourage some recreationists from camping in JMH but is not expected to have significant impacts on camping activities.

The projected decrease in the level of mineral development activities, along with limitations on ROWs, would reduce impacts on recreation resources and certain recreation users compared with the other alternatives. Potential overlapping resource uses would be minimized, and the overall recreation experience would likely be enhanced because of preservation of sensitive resources that attracts recreationists to the planning area. Construction and drilling activities would create dust, noise, and increased traffic, but not to the extent that they would under the No Action Alternative or Alternative 1; thus, any adverse impacts on recreation uses due to visual or audible disturbances to the recreation experience would not be significant.

Although additional access roads and well facilities would be constructed, this alternative would provide the lowest level of access to the planning area because of OHV use limitations. This could have an adverse impact on some hunters, because many hunting areas would be inaccessible except by nonmotorized means.

The entire planning area would be withdrawn from mineral location. This would have an adverse effect on recreational mining activities because no areas would be available for this type of use. Other recreation users would benefit from this action.

Management of visual resources under this alternative would provide protection to recreation resources by limiting or controlling surface disturbing activities and development in areas with sensitive visual resources. This would have a beneficial impact on recreation users by minimizing incompatible uses. Beneficial impacts would be greatest under this alternative because of increased designations of more restrictive VRM classifications.

Management prescriptions associated with additions and expansions of ACECs would benefit recreation resources by providing an increase in areas with opportunities for solitude and primitive recreation.

4.7.1.5 Alternative 3

Salt or mineral supplements for livestock would not be allowed within one-quarter mile of riparian habitat and National Historic and Scenic Trails. This would have a greater beneficial effect on recreation resources and users than would corresponding provisions under the No Action Alternative by ensuring protection of riparian areas used for camping and fishing and by maintaining the cultural integrity of the trails.

Approximately 30 percent of the planning area would be closed to OHV use. This could have adverse effects on users who preferred motorized forms of recreation, similar to the effects under the No Action Alternative.

Increased recreation planning would benefit recreation resources and resource users as described in Alternative 2. Camping would be limited to designated areas, and activities and locations would be monitored through a permit program for parties of 10 or more to minimize potential adverse impacts on other resource values. As under Alternative 2, special recreation use permits for managed activities proposed for the planning area would be reviewed and issued by the Rock Springs Field Office to monitor this type of activity and any potential impact on resources from such use. This could inconvenience outfitters and discourage some recreationists from camping in JMH but is not expected to have significant impacts on camping activities.

The projected decrease in the level of mineral development activities and limitations on ROWs compared with the No Action Alternative would likely reduce impacts on recreation resources and certain recreation users. The overall recreation experience in the JMH CAP planning area would likely be enhanced because of protection of sensitive resources that would attract recreationists to the area. Potential adverse impacts caused by visual or audible disturbances to the recreation experience could occur from construction and drilling activities but are not likely to be significant because of the temporary nature of these activities. Although mineral development facilities would constitute a long-term visual intrusion on the landscape that could affect recreation resource users, impacts would be site-specific and not likely to affect recreationists outside the viewshed of each facility.

Although most of the planning area would be open to mineral location, areas of notable recreation importance, including White Mountain Petroglyphs ACEC, Crookston Ranch, Tri-Territory Marker, Boars Tusk, and South Pass Summit, would be withdrawn from filing of mining claims, exploration, and development, as they would under the No Action Alternative. The lava rock portion of Steamboat Mountain and the northern area used for elk calving would also be withdrawn from mineral location. Recreational mining activity would be limited to a 5-acre site that would be designated in the Dickie Springs-Oregon Gulch Gold Placer Mining District area. A recreation site plan would be prepared and implemented to manage the site for recreation purposes. This would have a beneficial effect on other recreational users by preventing or limiting surface disturbing activities associated with mining activities in these particular areas.

VRM classifications would provide protection to recreation resources by limiting or controlling surface disturbing activities and development in areas of sensitive visual resources. This would have a beneficial impact on recreation users by minimizing incompatible uses in these areas. Beneficial impacts would be greater than under the No Action Alternative because of increased designations of more restrictive VRM classifications.

Management prescriptions associated with additions and expansions of ACECs would significantly benefit recreation resources by providing an increase in areas with opportunities for solitude and primitive recreation.

4.7.1.6 Proposed JMH CAP

For recreation resources, the management actions associated with this alternative primarily would affect where and when recreation use would be permitted within the planning area. The limitations placed on users of the planning area would depend on the location of sensitive resources and the measures used to protect these resources.

The management of land and water resources would not have significant impacts on recreation resources. Management actions generally limit the extent of surface disturbing activities or vegetation removal and provide for protection of wildlife habitat, which indirectly benefits the recreation user. Limitations on seasonal use of the planning area to protect sensitive plant and wildlife habitat would limit recreational use during certain times of the year; however, impacts on recreation users would not be significant because of the temporary nature of these limitations.

Salt or mineral supplements for livestock would not be allowed within 500 feet of riparian habitat and National Historic and Scenic Trails. This would have a beneficial effect on recreation resources, although less than would occur under Alternatives 2 and 3, by ensuring protection of riparian areas used for camping and fishing and by maintaining the cultural integrity of the trails.

Heritage sites such as White Mountain Petroglyphs, National Historic and National Scenic Trails, Boars Tusk, Crookston Ranch, and Tri-Territory Marker contribute to the recreation resources of the planning area. Managing and protecting these heritage resources would directly benefit the resources and users of these resources. Protection of these resources, in addition to the development of interpretive sites for selected areas, would enhance the recreation experience in the planning area.

This alternative would provide fewer opportunities than that of the No Action Alternative to develop the planning area. This would curtail surface disturbance and construction of facilities, which would likely benefit recreation opportunities in the planning area.

Increased recreation planning would benefit recreation opportunities in the planning area, as described in Alternative 2. Dispersed camping would be allowed under the Proposed JMH CAP as long as these activities would not cause damage to other resources. Special recreation use permits for activities proposed for the planning area would be reviewed by the Rock Springs Field Office to monitor this type of activity and any potential impact on resources from such use. This could inconvenience outfitters but would not be expected to deter recreation activities; thus any impact on users would be negligible.

Existing roads and trails provide adequate vehicle access in the planning area for recreation purposes. OHV designations would minimize adverse impacts on recreation resources by limiting disturbance to vegetation, watersheds, and wildlife; however, this could also impact OHV users through limitations on access and use within the planning area. Approximately 20 percent of the planning area would be closed to OHV use. A recreation plan would be developed to expand the parking area and facilities at the Greater Sand Dunes Recreation Area (i.e., OHV open area) to accommodate anticipated increases in OHV users, thereby enhancing the recreation experience.

As under Alternative 3, the projected decrease in the level of mineral development activities and limitations on ROWs under this alternative would slightly reduce impacts on recreation opportunities and certain recreation users compared with the No Action Alternative and Alternative 1. The overall recreation experience in the planning area would likely be enhanced because of protection of sensitive resources that would attract recreationists to the area. Potential adverse impacts caused by visual or audible disturbances to the recreation experience could result from construction and drilling activities but are not likely to be significant because of the temporary nature of these activities. Although mineral development facilities would constitute a long-term visual intrusion on the landscape that could affect recreation resource users, any impact would be site-specific and not likely to affect recreationists outside the viewshed of each facility.

Although the level of projected development would be the same as that under Alternative 3 (Table A13-7), the strategy for implementing fluid mineral leasing decisions (Appendix 17) might affect the degree of impact in certain areas. There would be no new oil and gas leasing in the majority of Area 3 (Figure A17-1), which could reduce impacts in this area over the long term. However, in the short term, this could result in more rapid exploration and development of existing leases in Area 3 because there would not be any opportunity to renew leases upon expiration. Moreover, given that much of this area is within the high development potential area (Map 69), successful well completion rates are expected to be high. These factors could result in a substantial increase in surface disturbance, noise, and visual intrusion over a relatively short period of time, potentially increasing short-term impacts on the recreation experience compared with Alternative 3.

Although most of the planning area would be open to mineral location, areas of notable recreation importance, including White Mountain Petroglyphs, Crookston Ranch, Tri-Territory Marker, and South Pass Summit, would be withdrawn from filing of mining claims, exploration, and development, as they would under the No Action Alternative. A portion of Steamboat Mountain and the northern birthing areas would also be withdrawn from mineral location. This would have a beneficial effect on recreation users by preventing or limiting surface disturbing activities associated with mining activities in these particular areas. Recreational mining activity would be allowed in those parts of the planning area that were not withdrawn from mineral location or where such withdrawals would not be pursued. Mineral sales would not be allowed within the greater sage-grouse nesting habitat.

Management of visual resources would provide protection to recreation resources by limiting or controlling surface disturbing activities and development in sensitive visual resource areas. This would have a beneficial impact on recreation users by mitigating incompatible uses in these areas. Impacts would be slightly greater than under the No Action Alternative because of increased designations of more restrictive VRM classifications.

Management prescriptions associated with additions of special management areas under this alternative would benefit the recreation resources increasing the area available for solitude and primitive recreation opportunities.

4.8 MINERALS AND ALTERNATIVE ENERGY RESOURCES

Minerals and alternative energy resources include fluid and solid minerals leased for development under the Mineral Leasing Act of 1920 and amendments, locatable minerals that may be claimed and patented under the Mining Act of 1947, earth materials that may be purchased under the Mineral Materials Sales Act of 1947, and alternative energy development projects that may be proposed within the planning area through a lease or permit arrangement with BLM. Where there is state or private ownership of the mineral estate, BLM does not have jurisdiction over the development of those mineral rights.

Impacts on resources and resource users resulting from implementation of mineral management actions are discussed in those particular resource sections. This section describes potential impacts that implementation of management actions for other resource management categories might have on mineral development and the development activity expected for each mineral resource under each alternative. These activity level projections also provide the basis for assessing impacts on the environment and other resource uses.

Impacts on mineral development would be considered significant if management actions or mitigation requirements resulted in a greater than 25 percent decrease in development activity over the planning period or caused development of the resource to be infeasible or economically nonviable.

4.8.1 Potential Impacts on Leasable Fluid Minerals

Impacts of management actions on resource development activities occur when management actions prohibit development of economically viable resources or when management actions render development infeasible or economically nonviable. The relative impacts of management actions are identified by projecting changes in development activity within the planning area for the different alternatives. A management action can impact the individual resource user, such as a lease operator, when it results in a projected change in development activity. The significance of the impact depends on the resulting change in overall development levels, which would depend on the amount of production affected by the action. Exploration and production activity within the JMH planning area would also be affected by factors other than management actions, such as commodity prices.

The effects discussed in the analysis are based on the estimated levels of development activity for the management actions that would be implemented under each alternative (Appendix 13). Land use planning decisions and mitigation requirements included in each alternative are also considered. Generally, a 20-year period, with the base year as 2001, was used in preparing assumptions for each resource. It is also assumed that BLM actions and land uses under each alternative would be required to comply with existing laws, regulations, guidelines, and standards for multiple use of public lands. The comparison of management alternatives assumes that increased resource mitigation generally results in increased costs for activities. It is assumed that prescribed mitigation measures through lease stipulations would be successful and adjusted over time to meet resource objectives. The assumption and analysis guidelines discussed above were used to assess impacts under all of the alternatives.

Leasable fluid minerals include oil, natural gas, and coalbed gas. The analysis of impacts for fluid minerals is based on the following assumptions.

Oil and Gas. It is assumed that all existing leases within the JMH CAP planning area would see some development over the 20-year planning period and that development activities would be concentrated in the high development potential area.

Under the Proposed JMH CAP, it is assumed that wells on existing leases in Area 3 would be drilled during the first 11 years of the planning period (8 year maximum lease term plus 3-year suspension release). Unleased portions of Areas 1 and 2 would be leased and once leases expired, it is assumed they would be available to be released.

The Wyoming Oil and Gas Conservation Commission has established a density of 160 acres per gas well, with federal exploratory units exempt from that density requirement. Nitchie Gulch unit/field is now developed at a density of 160 acres per well. Up to 38 new production wells would be drilled in Nitchie Gulch, with a maximum well density of up to six wells per section. This development is expected to occur over the first 5 years of the planning period. Other producing units in the planning area (Buccaneer, Rim Rock, and Steamboat Mountain units) are developed at a density of 640 acres per well. Future exploratory activity would be widely spaced; however, development activity would most likely occur at a density of 160 acres per well.

Ultimate gas recovery from existing gas wells is estimated to be 145.4 billion cubic feet. Approximately 24.3 billion cubic feet of gas is left to produce from these active wells. Based on the production history of wells in the planning area, the average estimated ultimate gas recovery is expected to be 2.3 billion cubic feet per well. Decline curve analysis indicates that the average well would produce about 2.3 billion cubic feet of gas over a lifespan of 26 years before declining to an uneconomic rate, which would then result in abandonment.

The ratio of gas to oil (condensate) production is assumed to remain similar to its present ratio. At this ratio an average well would produce only 117 barrels of oil each year. Because of the relatively low production rates of oil, these resources are not evaluated in the total production estimates for the planning area.

To avoid drainage from state and/or private fluid mineral development, adjacent 160-acre spacing areas could be accessed by directional drilling (probably from state or private surface locations). It is also assumed that because there is a small amount of state and/or private mineral land within the planning area, only a minimal amount of drainage would be likely to occur.

Surface Disturbance. The following disturbance rates are assumed for access roads, drill pads, and pipelines and power lines associated with oil and gas exploration and development drilling activities. The amount of surface disturbance per well is based on standard industry practices and compliance requirements of existing regulations for surface disturbing activities.

Access Roads:

- 40 feet total width
- 12- to 14-foot-wide travelway
- 4.8 acres initial disturbance per linear road mile

- 1.5 miles of road construction for exploration wells
- 0.375 miles of road construction for development wells
- 4.0 acres long-term disturbance per producing well (no stabilization or revegetation of barrow ditch)
- 4.0 acres of access road stabilized per abandoned dry well, after 3 years
- 4.0 acres of access road stabilized after abandonment of each producing well, after 3 years
- Road standards would be in conformance with guidelines issued in BLM Manual 9113 (Roads) and Surface Operating Standards for Oil and Gas Exploration and Development (1989).

Drill Pads:

- 3.0 acres initial disturbance per average well pad
- 0.7 acres long-term disturbance per producing well
- 2.3 acres stabilized per producing well, after 3 years
- 3.0 acres stabilized per abandoned dry well, after 3 years
- 0.7 acres stabilized after abandonment of each producing well, after 3 years.

Pipelines and Power Lines:

- 6.0 acres initial disturbance per producing well
- 5.5 acres stabilized per producing well, after 3 years
- 0.5 acres long-term disturbance per producing well
- 0.5 acres stabilized after abandonment of each producing well, after 3 years.

Drilling of wells would require water to make up drilling fluid and for consumption in various processes, such as washing down equipment and for fire fighting reserve water. In general, oil and gas wells drilled in the depth ranges expected in the planning area require 1 to 1.5 acre-feet of water. Coalbed gas wells drilled to depths of greater than 1,200 feet would require 0.75 to 1 acre-foot of water consumption.

Coalbed Gas. Currently, there is no active coalbed gas production in the planning area because of low gas production rates on initial well tests and water disposal costs. No coalbed wells are expected to be drilled until after the signing of the record of decision (ROD). Each project would contain up to 25 wells, 9 interior wells and 16 surrounding wells, to adequately evaluate an area. Drilling fewer than 16 surrounding wells might not reduce hydrostatic pressure to the point that an adequate test of potential to recover coal gas from the interior wells could be made. If successful, all 25 wells could eventually produce gas. No production rate assumptions were made for coalbed gas, and no production history is available on which to base a reasonable assessment at this time. Coalbed gas wells produce at relatively low rates, and the projected producing wells would not contribute significant production to the much larger volumes expected from conventional wells.

The surface disturbance rates associated with drilling oil and gas wells are similar to surface disturbance at coalbed gas wells for access roads, drill pads, and pipelines and power lines.

Expected water production rates associated with coalbed gas cannot be predicted for the planning area. Produced water from shallow-depth coal seams should contain lower concentrations of dissolved solids. However, most of the planning area is subject to strict water quality discharge requirements to comply with state and federal regulations on salinity control. Because the area with high coalbed gas potential is located within the Colorado River Basin, these requirements are assumed to apply to all coalbed gas development projects that may occur in the planning area. All produced water would be reinjected into the subsurface in compliance with water quality regulations. Existing gas wells in the planning area could be converted to injection wells at the end of their productive life.

4.8.1.1 Common to All Alternatives

The management alternatives include restrictions on fluid mineral resource development as a result of conflicts with environmentally related surface values. These restrictions result in impacts on the use of the resources while providing additional protection of the environment. Actions such as not leasing portions of the planning area, application of NSO restrictions, controlled surface use mitigation, seasonal restrictions, reclamation requirements, and ROW placement restrictions would affect the amount of exploration and development that would occur. These measures could discourage industry from initiating exploration and development activities and increase operating costs of development activities and transporting of products. Areas affected by restrictions or prohibitions on mineral development are listed in Tables 4-3 through 4-8 at the end of this chapter.

Where incremental costs resulted in a reduced return on investment below an acceptable minimum, the leaseholder could choose not to proceed with the development. The decision not to proceed with development would result in a reduced production of oil and gas, lower royalty and tax payments, and decreased spending with contractors and vendors, such as drilling and service companies. In some cases, a lease- or claimholder might recoup some or all of the expenditures for a right by selling his or her interest to another operator if there were a willing buyer. Exercise of mitigation measures could result in nonenvironmental impacts on resource users, including decreased profit and reduced interest in developing other economically marginal resources within the planning area.

Incremental compliance costs and related considerations less frequently make development of a commodity economically nonviable if the commodity is relatively high valued to begin with. Higher valued commodities, such as oil and gas, can bear some cost increases and still be profitable because of the value and scarcity of the material produced. In general, development of lower-value commodities, such as sand and gravel, are more sensitive to additional costs of compliance. As a result, for these commodities, alternate sources with lower compliance costs would likely be developed first. Because the costs would depend on the specific actions required for land use activities (such as resource protection or avoidance requirements for a proposed oil and gas well location), these costs could only be quantified at the time of the site-specific analyses. The comparison of management alternatives assumes that increased resource mitigation generally results in increased costs for activities.

Resources in areas where energy and mineral development are prohibited because of nondiscretionary closures cannot be developed regardless of the market for the commodity or interest in development. No associated income or related economic activity could be realized from these resources, and the lost opportunity for development represents an unknown impact for resource users. Areas closed to development, or with cumulative restrictions that would prevent development, are considered in the impacts on resource users for each of the alternatives. The expected surface disturbance and vehicle traffic associated with oil and gas development are listed in Table A13-7 (in Appendix 13) and Table 4-12 (at the end of this chapter), respectively. These expected levels of surface disturbance and traffic volumes provide the basis for assessing potential impacts on other resources and are discussed in the respective sections for these resources.

4.8.1.2 No Action Alternative

Based on the existing management decisions for the planning area, the current understanding of the geologic potential of the available area, and the existing stipulations placed on leases, the projected level of development was estimated for the Hydrocarbon Occurrence and Development Potential Report (Appendix 13). Under the No Action Alternative, more than 210,000 acres would be closed (including about 119,000 acres of existing nondiscretionary closure) to new leasing (Map 10). More than 412,000 acres would be available for development through current or newly obtained leases (Map 10).

It is expected that 38 development wells would be drilled to infill locations at Nitchie Gulch unit/field, and existing leases could be explored and developed within the core area. The planning area outside the core area would be available for further leasing and development activity. Because more than 60 percent of the core area is currently leased, activity could occur on those leases at the completion of the planning process. However, a significant number of the leases would expire during the planning period unless the leases were developed and held by production. Because no new leases could be offered in the core area and expiring leases would become unavailable for further development, potential reductions in development activity would occur. Based on the predicted drilling and completion rates for the parts of the planning area that are currently leased or are open to leasing under the No Action Alternative, the total estimated drilling activity would be 221 wells drilled, with 114 wells placed in production. This would include 126 exploration wells and 95 development wells drilled in the planning area. Impacts on the resource users under the No Action Alternative would include the loss of opportunity to obtain new leases in the core area and incremental costs required to comply with stipulations on active and new leases, consistent with the resource protection requirements of the Green River RMP. Operators put together blocks of leases before exploration. Where leasing is restricted, opportunities to obtain control of blocks of leases would be reduced and consequently, exploration interest would be reduced. Because this alternative would result in a loss of development potential in the core area where there are no planning decisions to support leasing, it could have a significant impact on individual operators of oil and gas developments.

No coalbed gas project has currently proved to be economically viable in this portion of the Greater Green River Basin. Available geologic information indicates that there is potential for future coalbed gas development. Leasing and development could occur under the same requirements applicable to oil and gas leasing under the No Action Alternative, including compliance with existing regulations and lease stipulations.

Under the No Action Alternative, an initial phase of coalbed gas exploration would be expected to include up to 50 wells. This is based on the development of two exploration projects, each having 25 closely spaced wells to effectively dewater the coal and determine maximum gas production rates. This is the assumed level of activity for which economic viability could be estimated. At least small quantities of gas would probably be produced from any test, and successful completion of two exploratory projects could result in gas production rates of several hundred thousand cubic feet of gas per day.

If exploration tests showed that coalbed gas development would be economically feasible, well life could be 10 to 20 years based on information on coalbed gas wells in the Powder River Basin. Because no information is available to determine well productivity or success rates for the planning area, it was assumed that none of the 50 wells would be abandoned during the planning period. In addition to the 50 well sites, other facilities, such as access roads, gas gathering and water disposal pipelines, water injection wells, electrical utilities, and compressors, would be constructed to aid in production of any gas developed. If economically successful exploration projects for coalbed gas were completed in the planning area, the actual production rates and the acreage of areas available for coalbed gas development could be used to estimate production rates. Impacts under the No Action Alternative on coalbed gas development are the same as those for oil and gas leasing and development. No new leases could be offered in the core area, and expiring leases would become unavailable for further development. Developments would also be required to comply with applicable lease stipulations, which could result in additional costs to the developers. Because this alternative would result in a loss of development potential in the core area where there are no planning decisions to support leasing, it could have a significant impact on coalbed gas development if significant coalbed gas resources were present in the core area.

4.8.1.3 Alternative 1

More than 119,000 acres would remain closed to leasing (Map 20). Approximately 500,000 acres would be available for leasing and development under this alternative. The average number of wells in currently producing units within JMH is approximately four wells. Based on the average number of wells per producing unit and the area available for development, new discoveries would result in drilling of 70 development wells, and development drilling in existing producing areas would be expected to result in drilling of 38 additional infill producing wells, resulting in a total of 108 new development wells. The total estimated drilling activity is 264 wells drilled, with 132 wells placed in production. No additional restrictions based on lease stipulations would be placed on drilling and development activities beyond existing regulatory requirements, so no additional associated costs would be placed on development. There would be no loss of development activity based on increased costs associated with these types of requirements. No additional areas would be closed to oil and gas leasing and development, and expiring leases in the core area could be offered for subsequent development, resulting in an increase in development opportunities over the No Action Alternative. This would have a positive impact on oil and gas development and provide the greatest opportunities for development.

The planning area would be open to leasing and development except for areas closed to development through existing nondiscretionary closures. New oil and gas leases would be offered in the core area. Because high coalbed gas potential areas exist in the planning area, it is assumed that two exploration projects and 50 wells would still be installed under this management action, as under the No Action Alternative and Alternative 3. Impacts on coalbed gas development actions under Alternative 1 would include reduced costs compared with the No Action Alternative, because fewer resource protection stipulations would be required. This would have a positive impact on coalbed gas development and would provide the greatest opportunities for development.

4.8.1.4 Alternative 2

The management actions under Alternative 2 would result in no new leasing in sensitive resource areas and would provide compensation for existing rights to willing leaseholders in areas that would be closed to leasing for protection of sensitive resources (Map 31). More than 584,000 acres would be closed (including 119,000 acres of existing nondiscretionary closures) to oil and gas development, and nearly 38,000 acres would be available for lease offerings. If purchases or exchanges of existing leases were executed (Appendix 16), no new drilling and completion of production wells would occur on these leases in sensitive resource areas. In parts of the planning area without sensitive resources, leasing and development could occur, consistent with the planning requirements of the Green River RMP. Although any lease in a sensitive resource area could be exchanged or purchased, it is expected that drilling of additional development wells in currently producing areas would not be exchanged or bought out because of the relatively high probability of success for these wells. Operators put together blocks of leases prior to exploration. Where leasing is restricted, opportunities to obtain control of blocks of leases would be reduced and consequently, exploration interest would be reduced. Impact on exploratory activity under this alternative would increase compared with the No Action Alternative and Alternative 1. Based on the current estimates of areas that would not be available for leasing under this alternative, approximately 86 exploration wells would be drilled in the rest of the planning area at the projected density for exploration activity, resulting in 13 new producing wells. Development of the new discoveries would be expected to require drilling of 39 new producing wells, along with 38 infill wells drilled to expand existing production, resulting in 77 new development wells. A total 163 new wells would be drilled, with 90 new wells placed in production. This alternative would result in significant impacts on oil and gas development (26 percent reduction in wells compared with the No Action Alternative), with the greatest area closed to additional development of any alternative.

Areas closed to oil and gas leasing also would not be available for coalbed gas development. Because a large part of the planning area with potential for coalbed gas development contains sensitive resources, it is assumed that only one coalbed gas exploration project would be completed in the planning area, with up to 25 wells installed to dewater and test production in the exploration project. The impacts on coalbed gas development under this alternative include less area available for leasing and development compared with the No Action Alternative, and increased costs associated with resource protection requirements in lease stipulations compared with Alternative 1. This alternative would result in significant impacts on coalbed gas development, with the greatest area closed to additional development of any alternative.

4.8.1.5 Alternative 3

Alternative 3 provides for controls on leasing and levels of drilling activity to prevent irreversible adverse impacts on sensitive resources in the planning area. In addition, more than 128,000 acres would be closed (including 119,000 acres of existing nondiscretionary closures) to new leasing and development, with approximately 490,000 acres available for oil and gas development (Map 42). Past drilling activity shows that the highest 5-year rate was during the 1978–1982 period, when 48 wells were drilled. It is assumed that if drilling activity occurred at a level near the maximum rate observed for a 5-year period, a maximum rate of drilling activity could be projected. At a rate of 46 wells per 5-year period, an additional 205 wells could be drilled in the JMH planning area, including 115 exploration wells and a total of 69 development wells, with 107 new wells placed into production (Appendix 13).

Impacts on oil and gas development would increase under this alternative (compared with Alternative 1 and the No Action Alternative) because of resource protection requirements and restrictions on development activity, which would reduce development opportunities and increase compliance costs. Operators put together blocks of leases before exploration. Where leasing is restricted, opportunities to obtain control of blocks of leases would be reduced and consequently, exploration interest would be reduced. Exploratory impact would increase compared with the No Action Alternative and Alternative 1. The expected level of development under this alternative could represent a significant impact on development, with some loss of areas to development, and restrictions on the timing of development activity that might result in lost opportunities for economically viable development. However, this effect would depend on the trends of the sensitive resource indicators monitored as part of adaptive management.

The coalbed gas development activity estimates under this alternative are similar to those predicted for Alternative 1. Although the additional resource protection requirements that would be implemented under this alternative would increase development costs and might decrease interest in development of coalbed gas resources by industry, the initial two exploration projects and 50 wells anticipated for Alternative 1 could be carried out within the planning area. A high development potential area could be leased and explored outside of sensitive resource areas. Any reduction in development related to access restrictions and costs associated with mitigation requirements would probably affect later development activity, which cannot be estimated from currently available information because there is no development history for coalbed gas production in the planning area.

4.8.1.6 Proposed JMH CAP

The Proposed JMH CAP provides for development of existing leases and closes a portion of the planning area to leasing for protection of sensitive resources. Approximately 317,000 acres would be closed (including about 119,000 acres of existing nondiscretionary closure) to new leasing and development, with just over 305,000 acres available for oil and gas development (Map 54). As outlined in Chapter 2 and Appendix 17, the JMH CAP fluid mineral leasing implementation strategy is composed of three areas. Area 1 would be open to oil and gas leasing, exploration, and development, with appropriate stipulations, mitigation, project planning, and design approach to meet JMH management objectives. Area 2 would be managed in the same way as Area 1, except that more stringent or intensive mitigation measures might be applied because of the amount of sensitive resource values. Area 3 would be closed to new leasing, and existing leases would not be renewed once they expired. A portion of Area 3 could be offered for lease with an NSO stipulation.

Lease suspensions would be lifted after 3 years from the signing of the ROD or on a case-by-case basis as requested by operators. This would allow industry time to submit proposals for development of those leases that were suspended with the Green River RMP ROD. Lease expiration dates are expected to be the driving factor for development of existing leases in Area 3 because of the inability to extend or renew leases. Those operators that hold multiple leases within Area 3 might not be provided with the opportunity to develop all of their leases because of the exploratory nature of development that would occur and the amount of capital if would take to provide drilling rigs for multiple lease areas. Small operators would be particularly affected by economic constraints. Because of the inability to extend or renew leases, exploration or drilling activity on existing leases within Area 3 is expected to occur in the first 11 years of the planning period, instead of over the 20-year life of the plan (because of the maximum 8-year lease period on existing leases within Area 3 and the 3-year reinstatement period for suspended leases).

A large portion of Area 3 is also within high development potential areas for oil and gas and coalbed gas resources. Although existing leaseholders would be given the opportunity to develop their leases, closing Area 3 to new leasing would affect resource users in ways similar to those under the No Action Alternative in the core area. Effects would include the loss of opportunity to obtain new leases in Area 3 and incremental costs required to comply with existing lease stipulations and COAs on active leases consistent with the resource protection requirements of the Proposed JMH CAP. The impacts on oil and gas development from this alternative include a net decrease in areas available for development compared with the No Action Alternative. The compliance costs associated with resource protection requirements would represent an increased impact on development compared with the No Action Alternative and Alternative 1.

Operators generally try to put together blocks of leases before exploration. They may also opt to unitize those lease blocks to assist in exploration. Where leasing is restricted, opportunities to obtain control of blocks of leases would be reduced and consequently, exploration interest would be reduced compared with the No Action Alternative and Alternatives 1 and 3. Because this alternative would result in a loss of development potential in Area 3, the inability to block up leases or to unitize lease blocks might represent a significant impact for individual operators of oil and gas developments.

Management actions, such as not leasing portions of the planning area, application of NSO stipulations, controlled surface use mitigation, seasonal restrictions, reclamation requirements, potential centralized and offsite placement of facilities, remote control monitoring, and ROW placement restrictions, being added for this alternative would affect the amount of exploration and development that would occur. These measures could discourage industry from initiating exploration and development activities and could increase operating costs related to development activities and transporting of products.

Past drilling activity shows that the highest 5-year rate was during the 1978–1982 period, when 48 wells were drilled. It is assumed that if drilling activity occurred at a level near the maximum rate observed for a 5-year period, a maximum rate of drilling activity could be projected. At a rate of 46 wells per 5-year period, an additional 205 wells could be drilled in the JMH planning area, including 115 exploration wells and a total of 69 development wells, with 107 new wells placed into production. The coalbed gas development activity estimates under this alternative are similar to those predicted for Alternative 1. Although the additional resource protection requirements that would be implemented under this alternative would increase development costs and might decrease interest in development of coalbed gas resources by industry, the initial two exploration projects and 50 wells anticipated for Alternative 1 could be carried out within the planning area. Access restrictions and costs associated with mitigation requirements would probably adversely affect levels of later development activity, which cannot be estimated from currently available information because there is no development history for coalbed gas production in the planning area.

4.8.2 Potential Impacts on Leasable Solid Minerals

Potential leasable solid minerals in the planning area include coal, oil shale, sodium (brine), and potash. The analysis of impacts for solid minerals is based on the following assumptions.

No oil shale development is expected during the planning period. There is low potential for coal and brine development. Existing coal mines and known coal reserves south of the planning area are expected to meet the demand for coal (USDI 1996), but limited amounts of exploration could occur within the planning area to evaluate future coal development potential. If coal exploration occurred at all, it would likely occur in the last 5 to 10 years of the planning period. The most probable location for exploration would be within the Coal Occurrence and Development Potential Area (Map 56) and would be limited to the areas open to exploration south and east of the Steamboat Mountain ACEC and south of the eastern portion of the Greater Sand Dunes ACEC. Access would largely be overland and along existing roads and trails. The amount of disturbance is expected to be between 10 and 15 acres and to occur in a single season. It is expected that disturbed sites would be fully reclaimed within 3 years of disturbance.

Projected brine (containing soda ash, oil, and gas) development potential for the planning period is also low. Existing soda ash mines and oil and gas developments can more easily and economically meet the demand for these products. The existing soda ash mines are located outside the planning area.

The Leucite Hills, including Boars Tusk and Steamboat Mountain, are known to contain potash, but development of this resource within the planning area is unlikely during the planning period given existing surface use constraints, poor accessibility, high development costs, and better availability of potash from existing sources outside the planning area.

4.8.2.1 Common to All Alternatives

Leasing and mining of coal on BLM-administered lands requires evaluation of prospective lease areas by a 20-point suitability screening process. Areas identified as coal potential areas have been through this screening process and are considered available for leasing. Areas determined to be suitable for leasing could have additional restrictions placed on mining activity, such as NSO or subsurface mining with controls on the location of surface facilities.

4.8.2.2 No Action Alternative

Under the No Action Alternative, approximately 16,000 acres of the coal potential area would be closed to leasing. Another 17,980 acres of the coal potential area would be available for subsurface mining with controls on the location of surface facilities. Approximately 70 acres would be available for coal leasing with NSO requirements. If exploration activities in other parts of the planning area identified coal resources with economic potential, the area could be leased if it were determined to be suitable for development under the screening process. More than 270,000 acres of the planning area would be closed to coal exploration. Although coal resources in the planning area are generally less desirable for development than resources in other locations, there is some potential for coal development in the planning area. Management actions affect the amount of land available for coal exploration, leasing, and mining, although these activities are not considered likely during the planning period.

Management actions under the No Action Alternative allow for consideration of leasing and development of potential potash and sodium resources. However, no development activity is expected in the JMH planning area during the planning period because of the lack of commercial deposits and/or because of existence of economic resources outside the planning area that are more favorable for development.

4.8.2.3 Alternative 1

The management actions under Alternative 1 close just under 5,000 acres in the coal potential area, with approximately 9,700 acres open to subsurface mining with controls on the location of surface facilities. More than 119,000 acres are closed to exploration activity because of special management areas and other resources protected by existing mitigation. No development activity is expected in the JMH planning area during the planning period because of the lack of commercial deposits and/or because of existence of economic resources outside the planning area that are more favorable for development. Therefore, although the closures to leasing and exploration represent a loss of opportunity to conduct these activities, impacts are not expected in development of these resources because development is not considered likely during the planning period.

4.8.2.4 Alternative 2

The management actions under Alternative 2 close the entire coal potential area to leasing, with more than 53,000 acres no longer available for leasing. The entire planning area (approximately 622,300 acres) would be closed to exploration activity. No development activity is expected in the JMH planning area during the planning period because of the lack of commercial deposits and/or because of existence of economic resources outside the planning area that are more favorable for development. Therefore, although the closures to leasing and exploration represent a loss of the opportunity to conduct these activities, impacts are not expected in development of these resources because development is not considered likely during the planning period.

4.8.2.5 Alternative 3

The management actions under Alternative 3 close approximately 16,000 acres in the coal potential area, with approximately 18,000 acres open to subsurface mining with controls on the location of surface facilities. Approximately 306,000 acres would be closed to exploration activity, as required for special management areas and other resources protected by existing regulations. The area available for leasing is similar to that under the No Action Alternative. No development activity is expected in the JMH planning area during the planning period because of the lack of commercial deposits and/or because of existence of economic resources outside the planning area that are more favorable for development. Therefore, although the closures to leasing and exploration represent a loss of the opportunity to conduct these activities, impacts are not expected in development of these resources because development is not considered likely during the planning period.

4.8.2.6 Proposed JMH CAP

The management actions under the Proposed JMH CAP close approximately 16,000 acres in the coal potential area, with approximately 20,600 acres open to subsurface mining with controls on the location of surface facilities. Approximately 320,000 acres would be closed to exploration activity, as required for special management areas and other resources protected by existing regulations. No development activity is expected in the JMH planning area during the planning period because of the lack of commercial deposits and/or because of existence of economic resources outside the planning area that are more favorable for development. Therefore, although the closures to leasing and exploration represent a loss of the opportunity to conduct these activities, impacts are not expected in development of these resources because development is not considered likely during the planning period.

4.8.3 Potential Impacts on Locatable Minerals

Existing levels of mining claim activity from the gold placers in the Dickie Springs/Oregon Gulch area are expected to continue through the planning period. Exploration activity on these claims has typically disturbed 1 to 5 acres at a time and is related to trenching with a backhoe or manual tools. Such activity is limited to the snow-free months, typically May through mid-November.

The potential for development of a gold mine in this area is low. Existing information indicates that gold occurrences are limited to thin zones within the sand and gravel deposits that host the gold. Lateral continuity of these zones has not been established. The limited extent of potential gold occurrences is probably below total resource requirements needed to support a commercial operation. No mine proposals have been submitted. However, a hypothetical gold mine will be used to evaluate the impacts that would be associated with a commercial gold discovery. A hypothetical mine could process as much as 320,000 tons per year of ore and disturb about 53 acres over an 11-year life.

There is potential for diamond occurrences in association with the Quaternary volcanic rocks (lamprophyres) at Steamboat Mountain, located in the southern portion of the planning area (Hausel et al. 1995). Additional exploration would be needed to further define these deposits. Exploration might occur during the planning period. Access to the top of Steamboat Mountain is limited; therefore, exploration could consist of using a helicopter to bring in a drill rig to gather the required information. About 2 acres of disturbance would be anticipated from this type of activity.

Locatable minerals considered to have no foreseeable development potential in the planning area include uranium and deposits of copper, lead, zinc, and silver. Based on current information and commodity prices, gold and diamonds are the only mineral types that have potential for development in the planning area.

4.8.3.1 Common to All Alternatives

Under each of the management alternatives, mineral exploration, filing of claims, and issuing of patents would comply with the requirements of the Mining Law of 1872 and regulations at 43 CFR 3809. Exploration disturbing more than 5 acres, activities in excess of casual use, or activities located in special management areas must file plans of operation. Reclamation plans would be developed and bonds posted for these operations. Withdrawals from mineral location are in effect for coal and oil shale in the planning area. These withdrawals are no longer considered necessary and will be revoked. Because most of these withdrawal areas have low potential for locatable mineral development, the revocations would not have a significant impact on future locatable mineral development activity.

4.8.3.2 No Action Alternative

Areas that are currently open to mineral location are available for exploration, locating of claims, and mining. More than 150,000 acres are withdrawn from all mineral location. There are currently active claims in the Dickie Springs/Oregon Gulch area of the planning area. Exploration activity on these claims has typically disturbed 1 to 5 acres at a time through trenching with a backhoe or manual tools. Development of a large-scale commercial gold mine in the planning area is considered unlikely based on the size and grade of potential ore deposits and expected gold prices. Because development of existing or new claims would be allowed in areas that have not been withdrawn from mineral location, there would be no additional impacts on exploration and mining of locatable minerals.

Exploration for diamonds is expected to occur in the planning area, resulting in a surface disturbance of approximately 2 acres. Additional disturbance would occur if a commercial diamond deposit were discovered. There is no sufficient information to evaluate the potential for development of a diamond find. There are no anticipated impacts on exploration and development activities for diamond mining because the diamond potential area is open to mineral location under this alternative.

4.8.3.3 Alternative 1

Under Alternative 1, more than 150,000 acres are withdrawn from mineral location. Requirements for exploration and mining activities are the same as under the No Action Alternative. Development of a large-scale commercial gold mine in the planning area is considered unlikely based on the size and grade of potential ore deposits, and expected gold prices. If a commercial deposit were discovered in the planning area, it is estimated that development of a mine could result in disturbance of about 53 acres over an expected mine life of 11 years. Up to 320,000 tons of ore would be mined. Because development of existing or new claims would be allowed in the areas that have not been withdrawn from mineral location, there will be no additional impacts on exploration and mining of locatable minerals.

Like the No Action Alternative, exploration for diamonds is expected to occur in the planning area, resulting in a surface disturbance of approximately 2 acres. Additional disturbance would occur if a commercial diamond deposit were discovered. There is no sufficient information to evaluate the potential for development of a diamond find. There are no anticipated impacts on exploration and development activities for diamond mining because the diamond potential area is open to mineral location under this alternative.

4.8.3.4 Alternative 2

The entire planning area would be withdrawn from mineral location under Alternative 2. Active claims would be evaluated, and any claims determined to be invalid would be declared null and void. Exploration and mining activity on claims determined to be valid could continue, typically disturbing 1 to 5 acres at a time through trenching with a backhoe or manual tools. No further impacts would occur from claims determined to be invalid. Development of a commercial mine could result in disturbance of about 53 acres over an expected mine life of 11 years. This could occur only if an existing claim were found to be valid and then successfully developed. Development of a large-scale commercial gold mine in the planning area is considered unlikely based on the size and grade of potential ore deposits and expected gold prices. The impact on gold mining under this alternative would include the loss of opportunity for exploration and development on any existing claims that would be declared null and void. In addition, the potential for development of a commercial mine, while unlikely based on geologic and economic factors, would be lost under this alternative.

No diamond exploration or development would occur under this alternative because there are no existing claims in potential diamond occurrence areas.

4.8.3.5 Alternative 3

Under Alternative 3, more than 160,000 acres would be withdrawn from mineral location. Active claims cover large areas within the proposed withdrawal areas. Those claims determined to be invalid would be declared null and void. The management action for locatable minerals would also include a designated area for recreational mining in the Dickie Springs/Oregon Gulch District. Approximately 5 acres would be withdrawn from mineral location and would be actively managed to support recreational mining. This would include removal and stockpiling of topsoil in an active area to provide access to placer beds for recreational miners. As the active area is mined out, BLM would regrade the excavation and replace the stockpiled soil to reclaim the area. Approximately 1 acre would be actively managed for recreational mining at any given time. Development of a large-scale commercial gold mine in the planning area is considered unlikely based on the size and grade of potential ore deposits and expected gold prices. However, development of existing or new claims would be allowed under Alternative 3 on the areas that had not been withdrawn from mineral location. The net impact is expected to be greater than that of the No Action Alternative because more of the area with the highest interest for gold development would be withdrawn if existing claims were not found to be valid.

Proposed withdrawals include the area of highest potential for diamond occurrence in the planning area, resulting in no surface disturbance for diamond exploration. The impact on diamond exploration and mining would be similar to that of Alternative 2, since the highest potential area would be withdrawn from mineral location.

4.8.3.6 Proposed JMH CAP

Under the Proposed JMH CAP, just over 155,000 acres would be withdrawn from mineral location. Withdrawals would be pursued for the northern elk calving areas, and the potential diamond mining area of Steamboat Mountain ACEC. Active claims cover large areas within the proposed withdrawal areas. Those claims would be evaluated, and any claims determined to be invalid would be declared null and void. However, development of existing or new claims would be allowed under the Proposed JMH CAP for the areas that had not been withdrawn from mineral location. The net impact is expected to be greater than that of the No Action Alternative because more of the area with the highest interest for gold development would be withdrawn if existing claims were not found to be valid.

Proposed withdrawals include the area of highest potential for diamond occurrence in the planning area, resulting in no surface disturbance for diamond exploration. The impact on diamond exploration and mining would be similar to that of Alternative 2 because the area with the highest occurrence potential area would be withdrawn from mineral location.

4.8.4 Potential Impacts on Salable Minerals

Suitable construction materials are lacking on the lands that remain open to development of salable minerals, with the exception of Steamboat Mountain, which is capped by volcanic rock. Demand for material in the planning area is expected to increase during the planning period, commensurate with the increase in oil and gas development and the needs of the Wyoming Department of Transportation (WYDOT) for reconstruction of U.S. Highway 191 and State Highway 28. Currently, sand and gravel for oil and gas development come from outside the planning area. Other construction materials, such as those used for constructing road base, are located during selection of the road alignment. Reconstruction of U.S. Highway 191 and State Highway 28 would require about 25 acres of disturbance in addition to the 4 acres of existing disturbance associated with WYDOT's pit along State Highway 28. WYDOT has a need for a 10-acre site along the east side of U.S. Highway 191 within the planning area for a hot batch plant by the year 2003. The other 15 acres of disturbance would be associated with mineral material sites located elsewhere along U.S. Highway 191 and State Highway 28. Development of the mineral material sites is expected within the latter 10 years of the planning period.

Potentially usable clays occur primarily in the southern portion of the planning area. With the surface use constraints that exist in this area and the abundance of clay products available from other sources, no development of this resource is expected within the planning area during the planning period.

4.8.4.1 Common to All Alternatives

All sales, permits, and community use pits must be conducted under the requirements of the Mineral Material Sales Act of 1947 and must comply with BLM regulations for operation of quarries or pits, including reclamation standards.

4.8.4.2 No Action Alternative

Areas closed to mineral material sales under the Green River RMP would remain closed under the No Action Alternative. More than 215,000 acres of the planning area are closed to mineral material sales, including ACECs, WSAs, certain cultural sites, and special status plant species sites. The permanent closure of Steamboat Mountain was deferred in the Green River RMP, but this area is considered open for mineral material sales under the No Action Alternative. For areas open to mineral sales, mining and reclamation plans would be required, and use and management would be in conformance with other resource objectives. Each sale of mineral materials or establishment of a community use pit would require a site-specific evaluation. Sales and mining would be allowed as long as no unacceptable impacts occurred to other resources. This would limit development of salable minerals in areas with other sensitive resources, such as special status plant species. Seasonal restrictions could also be placed on development activities to avoid time-sensitive impacts on wildlife, such as effects on greater sage-grouse leks or elk calving areas. In general there are few deposits of gravel within the planning area that are suitable for use as construction materials. Most construction materials used in the planning area are transported to projects from outside sources. The impacts on mineral material sales under the No Action Alternative include the lost opportunity for resource development in closed areas and the additional costs associated with resource protection requirements and access restrictions on mineral sales. These impacts could be significant where site-specific requirements resulted in a mineral development's not being economically viable.

4.8.4.3 Alternative 1

Approximately 164,000 acres of the planning area would be closed to mineral sales under this alternative, including ACECs, WSAs, certain cultural sites, and special status plant species sites. For areas open to mineral sales, mining and reclamation plans would be required, and use and management would be required to comply with regulatory standards. Each sale of mineral materials or establishment of a community use pit would require a site-specific evaluation. Sales and mining would be allowed, unless there were demonstrated impacts on other resources that could not be reclaimed or mitigated. The impact of Alternative 1 on the use of mineral materials would be increased opportunity for mineral material sales, based on reduced costs associated with fewer restrictions for resource protection and more areas available in comparison with the No Action Alternative.

4.8.4.4 Alternative 2

The planning area would be closed to mineral material sales under Alternative 2, except where development is required to meet other planning objectives, such as road construction under the approved transportation plan. The impacts on development of mineral materials related to decreased opportunity for mining cannot be projected from available information, but less area would be available for development of mineral materials under this alterative than under any other alternative considered in this analysis. The loss of area with development potential from mineral sales would result in significant impacts where there was an economic interest in obtaining mineral materials.

4.8.4.5 Alternative 3

In addition to the areas closed to mineral material sales under the No Action Alternative, the lava portion of the Steamboat Mountain ACEC and the area within one-half mile of greater sage-grouse leks would be closed. More than 255,000 acres would be closed under this alternative. Although this provides more area where mineral material sales would be permitted than under the No Action Alternative and Alternative 1, the overall amount of mining would be reduced based on the closure of the most desirable resource portion of Steamboat Mountain ACEC. Some limited talus and landslide deposits could be developed for construction materials, provided that the site-specific analysis required for the sale did not identify any unacceptable impacts. The overall impact on development of mineral materials under this alternative would be greater than that under the No Action Alternative because additional closures would be implemented in the areas most favorable for development of the resource.

4.8.4.6 Proposed JMH CAP

In addition to the areas closed to mineral materials sales under the No Action Alternative, the lava portion of Steamboat Mountain, the Pinnacles Geologic Feature, and the area within one-half mile of greater sage-grouse leks, would be closed to mineral material sales. Steamboat Mountain ACEC and the Steamboat Mountain Management Area would be open to mineral material sales only when required to meet other planning objectives. More than 490,000 acres would be closed under this alternative. Other sales in the planning area would be carried out where needed to meet planning objectives for the area (e.g., construction of recreational facilities). Some limited talus and landslide deposits could be developed for construction materials, provided that the site-specific analysis required for the sale did not identify any unacceptable impacts. The overall impact on development of mineral materials under this alternative would be greater than that under the No Action Alternative because additional closures would be implemented in the areas most favorable for development of the resource.

4.8.5 Potential Impacts on Alternative Energy Development

Alternative energy developments, such as wind farms and solar arrays, could be developed in the planning area as long as a proposed development was compatible with the planning criteria under the respective alternative. However, there are currently no specific proposals to develop these resources in the planning area, and future demand cannot be anticipated. The planning area is not located near any major population centers that would provide large-scale markets for produced power but is near an electric transmission line running from the power generating plant near Jim Bridger Mine to the northwestern United States. A specific analysis of any future proposed development would have to be performed based on its location, size, and type. The significance of future potential impacts currently cannot be determined.

4.9 VISUAL RESOURCES

Visual resources are the features of the landscape that contribute to the scenic quality of an area. The four VRM classes (as defined in Chapter 3) provide for planning, designing, and evaluating projects by identifying permissible levels of landscape alteration while protecting overall scenic quality.

4.9.1 Potential Impacts on Visual Resources

The VRM classifications establish objectives that prescribe the amount of change allowed in the characteristic landscape. Impacts on resources and resource users resulting from implementation of the VRM classifications are discussed in those particular resource sections. This section describes potential impacts on visual resources resulting from the implementation of management actions for other resource management categories.

An impact on visual resources would be considered significant if an activity or development occurred in an area that would be incompatible with the VRM classification objective.

For analysis purposes, it is assumed that VRM classifications would be incorporated into all project planning. Specific activities or developments that would not be compatible with VRM objectives would avoid those areas or would be modified and designed to meet the objectives. Activities or developments on state or private inholdings would not be significantly different so that proposed VRM classifications for surrounding public lands could not be achieved or maintained.

4.9.1.1 Common to All Alternatives

The planning area would be managed to maintain or improve scenic quality by managing the impacts of human activities and other intrusions on the visual landscape. The VRM classes provide the design standards for all surface disturbing projects. Projects would be designed, sited, screened, or painted to reduce adverse visual impacts regardless of the VRM classification.

WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape, having a beneficial impact on the visual resources of the area. The interim management policy for WSAs provides for temporary uses and limits surface disturbing activities to accommodate valid existing rights. This policy, together with the VRM Class I objective, would ensure the preservation of the wilderness characteristics of these areas.

4.9.1.2 No Action Alternative

WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. The Oregon Buttes ACEC and the western portion of the Greater Sand Dunes ACEC, which fall within WSAs, would also be managed as VRM Class I areas. The areas adjacent to WSAs, Steamboat Mountain ACEC (southern portion), and the remaining ACECs would be managed as VRM Class II areas. Steamboat Mountain ACEC (northern portion), Split Rock, Eden Valley, portions of White Mountain, and the portion of the Red Desert Watershed within the planning area would be managed as VRM Class III areas. All areas not managed as VRM Class I, II, or III for this alternative would be managed as VRM Class IV (Map 13).

Management of land and water resources would not have significant impacts on visual resources. The implementation actions generally limit the extent of surface disturbing activities or vegetation removal that could affect the character of the landscape. Range improvements and water developments would be compatible in VRM Class III and Class IV areas. Any improvements or developments proposed for areas of VRM Class II would result in only a low level of change to the landscape and would not likely attract the attention of the casual observer; thus, impacts would be negligible. Management actions that served to maintain or enhance land and water resources would provide beneficial impacts by improving overall visual quality.

Heritage sites such as White Mountain Petroglyphs, National Historic and National Scenic Trails, Boars Tusk, Crookston Ranch, and Tri-Territory Marker contribute to the character of the landscape. Managing and protecting these heritage resources in the planning area, including protection of Native American respected places, would directly benefit visual resources. Consultation with Native American tribal representatives could result in changes to a project design and location that would otherwise be compatible with VRM objectives, which could either benefit or adversely affect the scenic quality of the area.

Management of travel and access could have adverse impacts on visual resources by facilitating access and use within the planning area. Road construction and vehicle use can remove vegetation and alter the physical characteristics of the landscape. Impacts would be reduced by identifying and controlling highly traveled routes and providing for orderly development that is compatible with VRM objectives. The OHV designations would be compatible with VRM objectives. Any adverse impact on visual resources from surface disturbance or vegetation removal caused by OHV use would be minimal, provided that users adhered to the OHV designations.

The use of the planning area by recreationists, and the actions proposed for managing the recreation resources, would not have any adverse impact on the overall character of the landscape. The expansion of facilities at the Sand Dunes OHV recreation site would be designed to blend into the existing landscape of the area. The projected increase in recreationists using the planning area could affect the scenic quality of localized areas that experienced increased camping or other use. Any adverse impact would likely be insignificant because these small areas would be closed if resource damage occurred.

Oil and gas development and production facilities could have adverse impacts on visual resources in VRM Class II areas. The significance of this impact would depend on the amount of development projected to occur within Class II areas and the success of mitigation (siting, painting, and screening) to reduce visual effects. The addition of structures, particularly wells and power lines, to the landscape could have long-term adverse effects on scenic quality in the planning area; however, the visual intrusion of these structures would be site-specific and would not affect viewers outside the viewshed of each well site. Facilities in VRM Class III areas would not significantly impact the scenic quality of these areas, provided that the facilities did not dominate the view of the casual observer. Oil and gas development facilities would be compatible with VRM Class IV objectives, but mitigation measures would also be required as necessary to ensure that adverse visual impacts would be minimal.

Surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development could adversely impact visual resources. Land clearing and grading activities necessary for construction remove vegetation, which could temporarily and sometimes permanently alter the characteristics of the landscape. Belowground utilities and aboveground pipelines would be compatible with VRM Class III and Class IV designations and could be approved within Class II designations provided that adequate mitigation could be implemented, the results of which would not attract the attention of the casual observer. Aboveground power lines would not be allowed in the Red Desert Watershed Management Area, benefiting the viewshed in this area.

Site-specific nonlinear ROWs for microwave, transmitter, and other communication towers would be compatible with VRM Class IV designations. Communication sites would be allowed on Essex Mountain and Pacific Butte, having an adverse effect on visual resources, particularly in areas identified as respected places by Native Americans.

Withdrawing lands from certain resource uses would have beneficial impacts on scenic quality by limiting or prohibiting surface disturbing activities. Areas of notable scenic quality that would be withdrawn from mineral location include the White Mountain Petroglyphs, Greater Sand Dunes ACEC, Crookston Ranch, Tri-Territory Marker, and South Pass Summit. Surface disturbance associated with mining claims could have the potential to affect visual settings; however, fewer than 100 acres within the planning area would be assumed to be disturbed over the planning period as a result of locatable mineral activity. Thus, any adverse impact would likely be insignificant. Where mining activities would disturb more than 5 acres of land outside a special management area, a plan of operations would be required and a resource evaluation would be completed, thereby minimizing the potential impact on the character of the landscape.

Special management area management prescriptions (Map 13) would provide protection to visual resources by limiting or controlling surface disturbing activities. These areas are classified as VRM Class I and Class II; thus, any allowable visual intrusion would preserve or retain the existing landscape. This would have beneficial effects on the character and scenic quality of the landscape.

4.9.1.3 Alternative 1

WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. The Oregon Buttes ACEC and the western portion of the Greater Sand Dunes ACEC, which fall within WSAs, would also be managed as VRM Class I areas. The areas adjacent to WSAs and the South Pass Historic Landscape ACEC, the Greater Sand Dunes ACEC, and the White Mountain Petroglyphs ACEC would be managed as VRM Class II areas. No areas would be managed as VRM Class III. All areas not managed as VRM Class I or II for this alternative would be managed as VRM Class IV (Map 25).

This alternative would provide more opportunities to use and develop the planning area; thus additional surface disturbance and construction of facilities would be anticipated. More than half of the planning area would be classified as VRM Class IV. This would result in more effects on visual resources than would occur under the No Action Alternative.

The management of land and water resources under this alternative, like similar management under the No Action Alternative, would not have significant impacts on visual resources. Although more range improvements and water development projects would be expected, adverse impacts on the scenic quality of the planning area would be negligible because these projects would result in minimal change to the landscape and would not likely attract the attention of the casual observer. Beneficial impacts would be greatly reduced because of fewer actions designed to enhance land and water resources.

Heritage sites contribute to the character of the landscape and would be managed much as they would under the No Action Alternative. The area within one-quarter mile of Native American respected places would be protected from surface disturbing and disruptive activities. An adverse impact on visual resources and the viewers of these resources could occur if the character of the landscape of any respected place were altered to the extent that it lost its significance. Consultation with Native American tribal representatives could result in changes to a project design and location that would otherwise be compatible with the VRM objective, which could either benefit or adversely affect the scenic quality of the area. Benefits would be less than those under the No Action Alternative.

The OHV designations would be compatible with VRM objectives. Any adverse impact on visual resources in VRM Class II areas from surface disturbance or vegetation removal caused by OHVs would be minimal, provided that OHV users adhered to OHV designations.

Management of recreation resources would not have any adverse impact on the character of the landscape. The types of recreation activities occurring throughout the planning area would be compatible with VRM objectives. The resource user would likely be affected by visual intrusions on the landscape that could occur in a majority of the planning area. However, visual appeal is subjective; thus, the significance of any impact would vary among observers.

Oil and gas development and production facilities could have adverse impacts on visual resources in VRM Class II areas, as they would under the No Action Alternative. However, the overall extent of any impact on Class II areas would be slightly less than that of the No Action Alternative because there would be less Class II land area with the change in VRM class in the Steamboat Mountain area. The addition of structures, particularly wells and power lines, to the landscape could have long-term adverse effects on the scenic quality of the planning area; however, the visual intrusion of these structures would be compatible with the VRM objectives, and mitigation measures would also be required as necessary to ensure that adverse visual impacts would be minimal.

Surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development would not have significant adverse impacts on visual resources because the areas where development would likely occur would be compatible with VRM Class IV objectives. Aboveground power lines would not be allowed in the Red Desert Watershed Management Area, which would benefit the viewshed in this area.

Site-specific nonlinear ROWs for microwave, transmitter, and other communication towers would be compatible with VRM Class IV designations and thus would be allowed in many locations in the planning area. Communication sites would be considered for Steamboat Mountain, Essex Mountain, and Pacific Butte. This could have an adverse effect on visual resources, particularly in areas identified as respected places by Native Americans.

Although most of the planning area would be open to mineral location, areas of notable scenic quality, including White Mountain Petroglyphs, Crookston Ranch, Tri-Territory Marker, and South Pass Summit, would be withdrawn from mineral location. As under the No Action Alternative, surface disturbance associated with mining claims could affect visual settings. Fewer than 100 acres within the planning area would be assumed to be disturbed over the planning period because of locatable mineral activity; thus, any adverse impact would likely be insignificant. Where mining activities would disturb more than 5 acres of land outside a special management area or in a VRM Class II area, a plan of operations would be required and a resource evaluation would be completed, thereby minimizing the potential impact on the character of the landscape.

Special management areas would be classified as VRM Class I and Class II areas and would provide protection to visual resources by limiting or controlling surface disturbing activities. No visual intrusion would be allowed unless the existing landscape could be preserved or retained, having overall beneficial effects on the character and scenic quality of the area. However, the overall extent of any impact on the planning area would be slightly less than that of the No Action Alternative because there would be less Class II land area with the removal of the Class II designation from the Steamboat Mountain ACEC.

4.9.1.4 Alternative 2

WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. The Oregon Buttes ACEC and the western portion of the Greater Sand Dunes ACEC, which fall within WSAs, would also be managed as VRM Class I areas. Other areas managed as VRM Class I include all other ACECs, the Red Desert Watershed, Indian Gap, the Pinnacles Geographic Area, and portions of White Mountain. All sensitive habitat areas, wetlands, riparian areas, floodplains, split rock, and the Continental Peak/South Pass Connecting Side Trail would be managed as VRM Class II areas. All areas not managed as VRM Class I or II for this alternative would be managed as VRM Class III. No areas would be managed as VRM Class IV (Map 36).

This alternative would provide fewer opportunities to develop the planning area; thus, surface disturbance and construction of facilities would be curtailed. Approximately 85 percent of the planning area would be classified as VRM Class I and Class II; thus, beneficial impacts on visual resources would be anticipated through preservation and retention of the existing character of the landscape.

As under the No Action Alternative, management of land and water resources under this alternative would not have significant impacts on visual resources. Although range improvements and water development projects would be expected, they would be fewer in number than under the No Action Alternative, and adverse impacts on the scenic quality of the planning area would be negligible because these projects would result in minimal change to the landscape and would not likely attract the attention of the casual observer. Beneficial impacts would be greatest under this alternative because of increased efforts to enhance land and water resources.

Heritage sites contribute to the character of the landscape and would be managed much as they would under the No Action Alternative. Nomination of specific sites to the NRHP, and related management actions, would benefit scenic quality by providing additional protection to any viewshed that contributed to the sites' eligibility. The protection of Native American respected places would also directly benefit visual resources. Consultation with Native American tribal representatives could result in changes to a project design and location that would otherwise be compatible with the VRM objective, benefiting the scenic quality of these areas.

As under the No Action Alternative, management of travel and access could have adverse impacts on visual resources by facilitating access and use within the planning area. Road construction and vehicle use can remove vegetation and alter the physical characteristic of the landscape. Impacts would be less extensive than under the No Action Alternative because of implementation of a transportation plan specific to the planning area. Moreover, closing a majority of the planning area to OHV use would minimize related impacts on visual resources, provided that users adhered to OHV designations.

As under the No Action Alternative, management of recreation resources under this alternative would not have any impact on the character of the landscape. The types of recreation activities occurring throughout the planning area would be compatible with VRM objectives.

Oil and gas development and production facilities could have adverse impacts on visual resources in VRM Class I and Class II areas. Facilities in VRM Class III areas would not significantly impact the scenic quality of the area, provided that the facilities would not dominate the view of the casual observer.

Surface disturbing activities associated with the construction of facilities and linear ROWs could adversely impact visual resources. However, impacts would be the least extensive under this alternative because of the large amount of area subject to NSO stipulations, which would limit the level of development occurring in the planning area and thereby reduce related impacts on visual resources. In addition, aboveground power lines would not be allowed in the Red Desert Watershed Management Area, benefiting the viewshed in this area. Belowground utilities and aboveground pipelines would be compatible with VRM Class III areas and could be approved within Class II designations provided that adequate mitigation could be implemented, the results of which would not attract the attention of the casual observer. Site-specific nonlinear ROWs for microwave, transmitter, and other communication towers would also be compatible with VRM Class III classifications.

The planning area would be withdrawn from mineral location; thus, no adverse impacts on visual resources from such activities would be expected.

Special management areas would be classified as VRM Class I and Class II areas and would provide protection to visual resources by prohibiting any visual intrusion that would not preserve or retain the existing landscape. Management of additional areas that would be designated as special management areas would have beneficial effects on the scenic quality of the landscape.

4.9.1.5 Alternative 3

WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. The Oregon Buttes ACEC and the western portion of the Greater Sand Dunes ACEC, which fall within WSAs, would also be managed as VRM Class I areas. The remaining ACECs, areas adjacent to the WSAs, the portion of the Red Desert Watershed within the planning area, and the Continental Peak/South Pass Connecting Side Trail would be managed as VRM Class II areas. Unique geological features and landforms, including Boars Tusk, Split Rock, and portions of White Mountain, would also be managed as VRM Class II areas. Eden Valley would be managed as a VRM Class III area. All areas not managed as VRM Class I, II, or III for this alternative would be managed as VRM Class IV (Map 47).

This alternative would provide opportunities to use and develop the planning area; thus, surface disturbance and construction of facilities that could adversely impact visual resources would be anticipated. Approximately two-thirds of the planning area would be classified as VRM Class I and Class II; thus, beneficial impacts on visual resources would be greater than under the No Action Alternative but less than under Alternative 2.

As under the other alternatives, management of land and water resources under this alternative would not have significant impacts on visual resources. Although range improvements and water development projects would be expected, adverse impacts on the scenic quality of the planning area would be negligible because these projects would result in minimal change to the landscape and would not likely attract the attention of the casual observer. Beneficial impacts would be greater than under the No Action Alternative because of increased efforts to enhance land and water resources.

The impacts on visual resources from management of heritage resources would be similar to those under the No Action Alternative and Alternative 2. Nomination of specific sites to the NRHP, and related management actions, would benefit scenic quality by providing additional protection to any viewshed that contributed to the sites' eligibility. Protection of Native American respected places would also directly benefit visual resources.

As under the No Action Alternative, management of travel and access could have adverse impacts on visual resources by facilitating access and use within the planning area. Road construction and vehicle use can remove vegetation and alter the physical characteristics of the landscape. Impacts would be less extensive than under the No Action Alternative because of implementation of a transportation plan and the closure of more areas to OHV use. Any adverse impact on visual resources from surface disturbance or vegetation removal caused by OHVs would be minimal provided that users adhered to OHV designations.

Oil and gas development and production facilities could have adverse impacts on visual resources in VRM Class I and Class II areas, similar to those under Alternative 2. However, the significance of this impact would depend on the amount of development projected to occur within Class I and Class II areas and the extent of mitigation (siting, painting, screening) applied to the proposed activity to protect scenic quality. Impacts would be greater than under Alternative 2 because of the removal of the NSO stipulation and changes to OHV restrictions within the greater sage-grouse winter range. Facilities in VRM Class III areas would not significantly impact the scenic quality of these areas, provided that the facilities would not dominate the view of the casual observer and would be compatible with VRM Class III objectives.

Construction of facilities and linear ROWs could adversely impact visual resources; however, impacts would be minimized by limiting these activities to areas identified for such use. Belowground utilities and aboveground pipelines would be compatible with VRM Class III and Class IV and could be approved within Class II designations provided that adequate mitigation could be implemented, the results of which would not attract the attention of the casual observer. Aboveground power lines would not be allowed in the Red Desert Watershed Management Area, benefiting the viewshed in this area. This would reduce adverse impacts on the scenic value of the area.

Communication sites would be compatible with VRM Class IV designations. Areas closed to communication sites, as well as Class I areas and Class II areas that required mitigation to reduce sight intrusion, would benefit scenic quality. As under the No Action Alternative, communication sites on Essex Mountain and Pacific Butte could have an adverse effect on visual resources, particularly in areas identified as respected places by Native Americans.

Although most of the planning area would be open to mineral location, areas of notable scenic quality would be withdrawn from mineral location, as under the No Action Alternative. Fewer than 100 acres within the planning area would be assumed to be disturbed over the planning period as a result of locatable mineral activity; thus, any adverse impact on visual resources from surface disturbance or mining facilities would likely be insignificant. Where mining activities would disturb more than 5 acres of land outside a special management area or in a VRM Class II area, a plan of operations would be required and a resource evaluation would be completed, thereby minimizing potential adverse impacts on the character of the landscape.

Management of recreation resources could adversely impact the viewshed of the National Historic Trail. Limiting recreational mining activity to a 5-acre site in the Dickie Springs-Oregon Gulch Gold Placer Mining District area would concentrate such mining activities and increase vehicle travel to the site, which could subsequently create dust plumes visible from the trail. Although this would increase the difficulty of managing the viewshed, impacts would likely be minimal because of the limited amount of recreational mining activity that occurs in the planning area. Adhering to VRM class requirements would ensure that recreational activities would not cause significant impacts on visual resources.

As under Alternative 2, special management areas would be classified as VRM Class I and Class II and would provide protection to visual resources by prohibiting any visual intrusion that would not preserve or retain the existing character of the landscape. Management of additional areas designated as special management areas under this alternative would have beneficial effects on the scenic quality of the landscape.

4.9.1.6 Proposed JMH CAP

WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape. The Oregon Buttes ACEC and the western portion of the Greater Sand Dunes ACEC, which fall within WSAs, would also be managed as VRM Class I areas. The interim management policy for WSAs provides for temporary uses and limits surface disturbing activities to accommodate valid existing rights. This policy, together with the VRM Class I objective, would ensure the preservation of the wilderness characteristics of these areas. All ACECs, the Steamboat Mountain Management Area, the Pinnacles Geologic Feature, the areas adjacent to the WSAs, portions of White Mountain, and the West Sand Dunes Archaeological District would be managed as VRM Class II areas. Split Rock, Eden Valley, portions of White Mountain, and the portion of the Red Desert Watershed within the planning area would be managed as VRM Class III areas. All areas not managed as VRM Class I, II, or III for this alternative would be managed as VRM Class IV (Map 59).

The planning area would be managed to maintain or improve scenic quality by managing the impacts of human activities and other intrusions on the visual landscape. The VRM classes provide the design standards for all surface disturbing projects. Projects would be designed, sited, screened, or painted to reduce adverse visual impacts regardless of the VRM classification.

Management of land and water resources would not have significant impacts on visual resources. The implementation actions generally limit the extent of surface disturbing activities or vegetation removal that could affect the character of the landscape. Range improvements and water developments would be compatible with VRM Class III and Class IV objectives. Any improvements or developments proposed for VRM Class II areas would result in only a low level of change to the landscape and would not likely attract the attention of the casual observer; thus, impacts would be negligible. Beneficial impacts could be slightly greater than under the No Action Alternative because of increased efforts to enhance land and water resources.

Heritage sites such as White Mountain Petroglyphs, National Historic and National Scenic Trails, Boars Tusk, Crookston Ranch, and Tri-Territory Marker contribute to the character of the landscape. Managing and protecting these heritage resources in the planning area, including the protection of Native American respected places, would directly benefit visual resources. Consultation with Native American tribal representatives could result in changes to a project design and location that would otherwise be compatible with the VRM objective, which could either benefit or adversely affect the scenic quality of the area.

Management of travel and access could have adverse impacts on visual resources by facilitating access and use within the planning area. Road construction and vehicle use can remove vegetation and alter the physical characteristics of the landscape. Impacts would be reduced by identifying and controlling highly traveled routes and providing for orderly development that is compatible with VRM objectives. The OHV designations would be compatible with VRM objectives. Any adverse impact on visual resources from surface disturbance or vegetation removal caused by OHV use would be minimal provided that users adhered to OHV designations. Implementation of a transportation plan specific to the planning area would help reduce impacts compared with the No Action Alternative.

The use of the planning area by recreationists, and the actions proposed for managing the recreation resources, would not have any adverse impact on the character of the landscape. The expansion of facilities at the Sand Dunes OHV recreation site would be designed to blend into the existing landscape of the area. The projected increase in recreationists using the planning area could affect the scenic quality of localized areas that experienced increased camping or other use. Any adverse impact would likely be insignificant because these small areas would be closed if resource damage occurred.

Surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development could adversely impact visual resources. Land clearing and grading activities necessary for construction remove vegetation, which could temporarily and sometimes permanently alter the characteristics of the landscape. Belowground utilities and aboveground pipelines would be compatible with VRM Class III and Class IV designations and could be approved within Class II designations provided that adequate mitigation could be implemented, the results of which would not attract the attention of the casual observer. Aboveground power lines would not be allowed in the Red Desert Watershed Management Area, which would benefit the viewshed in this area.

Oil and gas development and production facilities could have adverse impacts on visual resources in VRM Class II areas. The significance of this impact would depend on the amount of development projected to occur within Class II areas and the success of mitigation (siting, painting, screening) to reduce visual effects. The addition of structures, particularly wells and power lines, to the landscape could have long-term adverse effects on the scenic quality of the planning area; however, the visual intrusion of these structures would be site-specific and would not affect viewers outside the viewshed of each well site. Facilities in VRM Class III areas would not significantly impact the scenic quality of the area provided that the facilities would not dominate the view of the casual observer. Oil and gas development and production facilities would be compatible with VRM Class IV objectives, but mitigation measures would also be required as necessary to ensure that adverse visual impacts would be minimal. These impacts could be reduced in Area 3 (Figure A17-1) of the fluid mineral leasing implementation strategy (Appendix 17). The majority of Area 3 would be closed to new oil and gas leasing, which could result in fewer visual intrusions in this area. Over the long term, impacts in Area 3 would be minimized because all leases in this area would expire within an 11-year time period.

Site-specific nonlinear ROWs for microwave, transmitter, and other communication towers would be compatible with VRM Class IV designations. Adequate mitigation measures (siting, painting, screening) would be implemented where possible. Communication sites would be allowed on portions of Essex Mountain and Pacific Butte. This would have an adverse effect on visual resources, particularly in areas identified as respected places by Native Americans, although adverse effects would be less than those under the No Action Alternative.

Withdrawing lands from certain resource uses would have beneficial impacts on scenic quality by limiting or prohibiting surface disturbing activities. Areas of notable scenic quality that would be withdrawn from mineral location include the White Mountain Petroglyphs, Greater Sand Dunes ACEC, Crookston Ranch, Tri-Territory Marker, and South Pass Summit. Surface disturbance associated with mining claims could affect visual settings; however, fewer than 100 acres within the planning area would be assumed to be disturbed over the planning period as a result of locatable mineral activity. Thus, any adverse impact would likely be insignificant. Where mining activities would disturb more than 5 acres of land outside a special management area, a plan of operations would be required and a resource evaluation would be completed, thereby minimizing potential impact on the character of the landscape.

Special management area management prescriptions would provide protection to visual resources by limiting or controlling surface disturbing activities. These areas are classified as VRM Class I and Class II; thus, any allowable visual intrusion would preserve or retain the existing landscape. This would have overall beneficial effects to the character and scenic quality of the landscape.

4.10 SPECIAL MANAGEMENT AREAS

Special management areas (SMA) require special management prescriptions to ensure that the areas and their resources are managed and protected from irreparable damage. These areas include WSAs, ACECs, special recreation management areas (SRMA), and other areas, including watersheds.

4.10.1 Potential Impacts on Special Management Areas

SMAs provide management for unique natural, historic, scenic, or recreational resources in the planning area, having a beneficial impact on resources and nonenvironmental effects on resource users. Impacts on resources and resource users resulting from implementation of SMA management prescriptions are discussed in those particular resource sections. This section describes potential impacts on SMAs resulting from the implementation of management actions for other resource management categories.

An impact on SMAs would be considered significant if a level of development or activity occurred that would be incompatible with the SMA objectives and management prescriptions. A significant impact would result if an activity or development would impair the suitability of WSAs for preservation as wilderness or if resources were adversely affected to the point that the current SMA no longer met the criteria for designation.

For analysis purposes, it is assumed that all areas existing and proposed as ACECs meet the relevance and importance criteria. It is also assumed that the WSAs would remain under wilderness review and that wilderness designation or nondesignation would not occur during the planning period. The WSAs would continue to be managed under the Interim Management Policy and Guidelines for Lands Under Wilderness Review. Activities or developments on state or private inholdings would not significantly affect the criteria necessary to maintain designations, nor would they be significantly affected by SMA management prescriptions.

4.10.1.1 Common to All Alternatives

The existing SMAs would continue to be managed to preserve and protect the integrity and character of the specific areas, in accordance with ACEC policies and WSA interim management policies. All management actions and resource uses would focus on the protection of sensitive environmental resources and the health and safety of the user.

Management of land and water resources would not have significant impacts on SMAs. Special management area values include geologic features, fragile plant species habitat, cultural and historical values, visual values, recreation values, and unique wildlife habitat. The implementation actions generally limit the extent of surface disturbing activities, vegetation removal, and season of use, providing protection of wildlife habitat and locations of special status plant species. Livestock grazing implementation actions would be evaluated and modified as needed to be consistent with the management prescriptions of SMAs. These land and water implementation actions generally coincide with the management objectives of SMAs.

Heritage sites, such as White Mountain Petroglyphs, Boars Tusk, Killpecker Sand Dunes, South Pass, and National Historic and National Scenic Trails, are part of or are located within existing SMA boundaries. Managing and protecting these heritage resources, including the protection of related Native American respected places, would not impact the management prescriptions of SMAs. Implementation actions for managing heritage resources would be complementary to SMA objectives.

Land adjustments and exchanges of state lands within WSAs and other SMAs identified in the Green River RMP would be pursued. Acquiring state inholdings would likely result in beneficial impacts on the resources in SMAs because BLM could implement cohesive management prescriptions and avoid fragmentation of these areas.

Management of recreation resources would have beneficial impacts on SMA resources. The WSAs and ACECs are popular recreation destinations; thus, the preparation of recreation site plans and placement of interpretive signs would have beneficial impacts on both the resource and the user. Recreational management actions could have an overall indirect beneficial effect on SMA resources through public education via interpretive materials on the importance of protecting and preserving unique resources. The preparation of recreation project plans for the National Historic Trails, Crookston Ranch, Boars Tusk, and White Mountain Petroglyphs would benefit the users of these resources by providing interpretive materials on historical and cultural sites of interest.

WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape, having a beneficial impact on SMA resources. The interim management policy for WSAs provides temporary uses and limits surface disturbing activities. This policy, together with the VRM Class I objective, would ensure the preservation of the wilderness characteristics of these areas.

The implementation prescriptions proposed for managing SMAs would have direct beneficial effects on the resources of those SMAs and thus would indirectly benefit the continued management of these areas as SMAs. As stated above, the potential impacts of implementing these management prescriptions are discussed separately for each resource management category.

4.10.1.2 No Action Alternative

Managing wildlife and the associated restrictions on OHV use could have some indirect impacts on some SMAs caused by limiting access to otherwise popular recreational OHV sites. At the same time, these actions could prove to be beneficial in the management of soil erosion and compaction because the seasonal restrictions are in place during a time of wet conditions. Although the actions could have beneficial and adverse impacts, these are expected to be minimal because of the seasonal nature of these restrictions.

Managing travel and access throughout the planning area could have beneficial impacts on SMA resources by identifying and controlling highly traveled routes and providing for orderly development that would be compatible with SMA objectives. The OHV designations would be compatible with SMA management prescriptions. Any impact on the integrity and maintenance of the designated area from surface disturbance or vegetation removal caused by OHVs would be minimal, provided that OHV users adhered to OHV designations.

Surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development could adversely impact SMAs. Such activities could affect the integrity and continued maintenance of the area as an SMA and would be visually apparent to the users of the areas. However, with the implementation of management prescriptions for SMAs, including the interim management guidelines for WSAs that prohibit impairment, any impact would be insignificant.

Withdrawing lands from mineral location and revoking existing withdrawals would impact SMA resources and resource users. The oil shale and coal classification would be revoked, and upon its revocation, all SMAs, with the exception of White Mountain Petroglyphs, the Greater Sand Dunes ACEC, special status plant sites, Crookston Ranch, Tri-Territory Marker, and South Pass Summit, would be open for mineral location (Map 5), potentially having an adverse effect on SMA resources. However, a plan of operations would be required and a resource evaluation would be completed for any mining activity within an SMA, thereby minimizing potential impacts on the characteristics of the area that support its special designation.

The VRM classifications could have beneficial effects through the protection of viewsheds associated with historic resources, such as South Pass Historic Landscape, and with sites of concern to Native Americans, such as White Mountain Petroglyphs. The VRM Class II designation for these locations, the southern portion of Steamboat Mountain ACEC, the remaining ACECs, and areas adjacent to the WSAs would limit the design and placement of structures to blend in with the landscape. Much of the Red Desert Watershed Management Area would be managed as a VRM Class III area to retain the existing character of the landscape. These classifications would have a beneficial effect by maintaining the resource integrity for which the areas were designated.

4.10.1.3 Alternative 1

Managing travel, access, and OHV use throughout the planning area would have impacts similar to those under the No Action Alternative. However, impacts could be greater because of less restrictive OHV management actions (i.e., fewer seasonal closures and less area limited to designated roads and trails).

Adverse impacts from surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development would be greater than under the No Action Alternative. These activities could affect the criteria for SMA designation, potentially resulting in significant impacts on SMA resources. Implementation of management prescriptions for WSAs, including the interim management guidelines that prohibit impairment, would greatly reduce adverse impacts in those areas. Implementation of other SMA management prescriptions would reduce adverse impacts; however, adverse impacts are not expected to be reduced to a level where they would be insignificant.

The withdrawal of lands from mineral location would have the same impacts as those under the No Action Alternative, except that the Greater Sand Dunes ACEC would be open for mineral location. This would have adverse effects on the Greater Sand Dunes ACEC. However, a plan of operations would be required and a resource evaluation would be completed for any mining activity within the SMA, thereby minimizing potential impacts on the characteristics of the ACEC that support its special designation.

Effects from VRM classifications would be the same as those under the No Action Alternative, except that much of the Red Desert Watershed Management Area would be managed as VRM Class IV. This might have significant adverse impacts on the existing character of the landscape by compromising the resource integrity for which the area was designated.

4.10.1.4 Alternative 2

Greater beneficial impacts on SMA resources would occur due to the management of travel and access throughout the planning area through creation of a transportation plan. The plan would identify and control highly traveled routes, providing for orderly development that would be compatible with ACEC and WSA objectives, and provide maximum protection for sensitive resources. The OHV designations would be compatible with SMA management prescriptions. Managing travel and restricting OHV use within the greater sage-grouse winter range could result in greater impacts on SMAs than would occur under the No Action Alternative by generating heavier use in SMAs. Any impact on the integrity and maintenance of designated SMAs from surface disturbance or vegetation removal caused by OHVs would be minimal provided that OHV users adhered to OHV designations.

Adverse impacts on SMA resources from surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development would be the least extensive under this alternative because of ROW avoidance or exclusion and controlled surface use or NSO prescriptions for all SMAs.

All SMAs would be closed to coal and other solid mineral exploration, leasing, and development and withdrawn from mineral location. No new leases for fluid minerals would be offered in any SMA. These actions would have significant beneficial impacts on the SMAs by protecting the resources from the surface disturbance associated with mineral development activities.

The VRM classifications under this alternative would have greater beneficial effects on SMA resources than would those under the No Action Alternative because all SMAs would be classified as Class I.

Additions to and expansions of ACECs would significantly benefit the resources within these areas because of the amount of land area and management prescriptions associated with these designations. The proposed expansion of the Greater Sand Dunes ACEC to include the paleosol deposition area would ensure protection to significant geological and archeological components of the study of early human habitation of North America. This area meets the relevance criteria of significant historic and cultural value and the importance criteria of having a locally significant quality that makes the area rare, irreplaceable, and unique. This area would be further evaluated as a research natural area (RNA) and maintained for the primary purpose of research and education. The RNA would primarily be used for nonmanipulative research and baseline data gathering. Another RNA would be proposed for the dunal ponds within the Sand Dunes WSA portion of the Greater Sand Dunes ACEC. These ponds are a unique water resource that supports various forms of aquatic and terrestrial wildlife and would also be managed for minimal human and animal disturbance, thus benefiting these resources.

The proposed expansion of the Steamboat Mountain ACEC would ensure protection of important wildlife habitat, a unique vegetation type, and significant heritage resources. These areas meet the relevance and importance criteria for wildlife and cultural values of national significance and contain unique habitat features found nowhere else in the planning area. The basin big sagebrush/lemon scurfpea vegetation type within the expanded ACEC area would be evaluated for designation as an RNA, which would be managed for minimum human disturbance. The RNA would be established and maintained for the primary purpose of protecting qualities that make the basin big sagebrush/lemon scurfpea fragile, sensitive, rare, and vulnerable to adverse change.

The Special Status Plant Species ACEC would be expanded into the JMH CAP planning area to include BLM-administered land occupied by all Wyoming BLM special status plant species and any potential habitat for these species. This would provide beneficial effects to these species by providing protective measures for their propagation and survival.

The cushion plant community would meet the relevance criteria for rare and endemic plants and plant communities and would be designated an ACEC. This ACEC would be managed as an RNA for scientific research and education to learn more about these unique plant species and associations. This would represent a significant beneficial impact for these species by raising awareness of the species and providing protective measures for their propagation and survival.

Management of the Pinnacles Geographic Area, which includes the Pinnacles Geologic Feature ACEC, would significantly benefit the natural resources within this area. Access to the parcel of state land adjacent to this area would be provided via an existing road; the presence and any future maintenance of this road would not impact the manageability of the Pinnacles Geographic Area. The proposed management action of pursuing land exchanges for improving management of resources and minimizing habitat fragmentation would apply to this parcel of state land, thereby improving the manageability of the area. There are no existing mining claims within the Pinnacles Geographic Area, which would eliminate any impact on the manageability of the area from existing or future claims. The proposed implementation actions for this alternative include the buy-back and exchange of leases located in areas of sensitive resources, and no new leases would be offered in sensitive resource areas. Therefore, the manageability of this area would be compatible with management actions for other resources in the planning area. Activities to support livestock operations, such as water developments and range improvements, would be allowed within the Pinnacles Geographic Area, provided that the construction, use, and maintenance of the facilities were in compliance with the management prescriptions for this area.

4.10.1.5 Alternative 3

Managing travel and access throughout the planning area through creation of a transportation plan could have greater beneficial impacts on SMA resources than under the No Action Alternative by identifying and controlling highly traveled routes, providing for orderly development that would be compatible with SMA objectives and providing maximum protection for sensitive resources. The OHV designations would be compatible with SMA management objectives and prescriptions. Any impact on the integrity and maintenance of the designated area from surface disturbance or vegetation removal caused by OHVs would be minimal provided that OHV users adhered to OHV designations.

The effects of surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development would be minimal because of management prescriptions of controlled surface use and NSO in the majority of SMAs (Map 39 and Map 40).

Withdrawal of lands from mineral location under this alternative would have the same impacts on the SMA resources and resource users as that under the No Action Alternative.

The VRM classifications under this alternative would have greater beneficial effects on SMA resources than would those under the No Action Alternative because all SMAs would be classified as either Class I or Class II.

Additions to and expansions of ACECs would significantly benefit the resources within these areas because of the amount of land area and management prescriptions associated with these designations. The proposed expansion of the Greater Sand Dunes ACEC to include the paleosol deposition area would ensure protection of significant geological and archeological components of the study of early human habitation of North America. The proposed expansion of the Steamboat Mountain ACEC to include Indian Gap and the face of Steamboat Mountain would ensure protection of important wildlife habitat, a unique vegetation type, and a significant heritage resource. Designation and management of cushion plant communities as an ACEC and the proposed expansion of the Special Status Plant Species ACEC into the JMH CAP planning area to include BLM-administered land occupied by all Wyoming BLM special status plant species would provide protective measures for these species' propagation and survival. However, the benefits of protection of resources from ACEC expansions would be less than under Alternative 2 because less area would be designated as SMAs and no further evaluation of areas as RNAs would occur.

Management of the Pinnacles Geographic Area would significantly benefit the natural resources within this area. Access to the parcel of state land adjacent to this area would be provided via an existing road; the presence and any future maintenance of this road would not impact the manageability of the Pinnacles Geographic Area. The proposed management action of pursuing land exchanges for improving management of resources and minimizing habitat fragmentation would apply to this parcel of state land, thereby improving the manageability of the area. There are no existing mining claims within the Pinnacles Geographic Area, which would eliminate any impact on the manageability of the area from existing or future claims. No new leases would be offered in the Pinnacles Geographic Area; therefore, the manageability of this area would be compatible with management actions for other resources in the planning area. Activities to support livestock operations, such as water developments and range improvements, would be allowed within the Pinnacles Geographic Area, provided that the construction, use, and maintenance of the facilities were in compliance with the management prescriptions for this area.

4.10.1.6 Proposed JMH CAP

The existing SMAs would continue to be managed to preserve and protect the integrity and character of the specific areas in accordance with ACEC policies and WSA interim management policies. All management actions and resource uses would focus on the protection of the sensitive environmental resources and the health and safety of the user.

Management of land and water resources would not have significant impacts on SMAs. The implementation actions generally limit the extent of surface disturbing activities, vegetation removal, and season of use, providing protection of wildlife habitat and locations of special status plant species. Livestock grazing implementation actions would be evaluated and modified as needed to be consistent with the management prescriptions of SMAs. These land and water implementation actions generally coincide with the management objectives of SMAs.

Heritage sites, such as White Mountain Petroglyphs, Boars Tusk, Killpecker Sand Dunes, South Pass, and National Historic and National Scenic Trails, are part of or are located within existing SMA boundaries. Managing and protecting these heritage resources, including the protection of related Native American respected places, would not impact the management prescriptions of SMAs. Implementation actions for managing heritage resources would be complementary to SMA objectives.

Managing travel and access throughout the planning area through creation of a transportation plan would have beneficial impacts on SMA resources by identifying and controlling highly traveled routes, providing for orderly development that would be compatible with ACEC and WSA objectives, and providing maximum protection for sensitive resources. The OHV designations would be compatible with SMA management prescriptions. Any impact on the integrity and maintenance of the designated area from surface disturbance or vegetation removal caused by OHVs would be minimal, provided that OHV users adhered to OHV designations.

Land adjustments and exchanges of state lands within WSAs and other SMAs identified in the Green River RMP would be pursued. Acquiring state inholdings would likely result in beneficial impacts on the resources in SMAs because BLM could implement cohesive management prescriptions and avoid fragmentation of these areas.

Management of recreation resources would have beneficial impacts on SMA resources. The WSAs and ACECs are popular recreation destinations; thus, the preparation of recreation site plans and placement of interpretive signs would have beneficial impacts on both the resource and the user. Recreational management actions could have an overall indirect beneficial effect on SMA resources through public education via interpretive materials on the importance of protecting and preserving unique resources. The preparation of recreation project plans for the National Historic Trails, Crookston Ranch, Boars Tusk, and White Mountain Petroglyphs would benefit the users of these resources by providing interpretive materials on historical and cultural sites of interest.

Surface disturbing activities associated with the construction of facilities and linear ROWs for pipelines, transmission lines, communication lines, and oil and gas development could adversely impact SMA resources. These activities could have adverse impacts because they could affect the integrity and continued maintenance of the area as an SMA and would be visually apparent to the users of SMAs. However, with the management prescriptions for SMAs, including the interim management guidelines for WSAs that prohibit impairment, the appropriate actions to meet objectives would be provided and any impact would be insignificant. Furthermore, SMAs could be further protected in Area 3 (Figure A17-1) of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17). The majority of Area 3 would be closed to new oil and gas leasing, which could reduce potential impacts on SMAs in this area. Over the long term, impacts in Area 3 would be minimized because all leases in this area would expire within an 11-year time period.

Withdrawing lands from mineral location and revoking existing withdrawals would affect SMA resources and resource users. The oil shale and coal classification would be revoked, and upon its revocation, all SMAs, with the exception of White Mountain Petroglyphs, the western portion of the Greater Sand Dunes ACEC, special status plant sites, Crookston Ranch, Tri-Territory Marker, and South Pass Summit, would be open for mineral location (Map 53), potentially having an adverse effect on SMA resources. However, a plan of operations would be required and a resource evaluation would be completed for any mining activity within an SMA, thereby minimizing potential impact on the characteristics of the area that support its special designation. The WSAs would be managed as VRM Class I areas to preserve the natural setting and existing character of the landscape, having a beneficial impact on SMA resources. The interim management policy for WSAs provides for temporary uses and limits surface disturbing activities. This policy, together with the VRM Class I objective, would ensure the preservation of the wilderness characteristics of these areas.

The VRM classifications could have beneficial effects through the protection of viewsheds associated with historic resources, such as South Pass Historic Landscape, and with sites of concern to Native Americans, such as White Mountain Petroglyphs. The VRM Class II designation for these locations, the Steamboat Mountain ACEC, the remaining ACECs, and the area adjacent to WSAs would limit the design and placement of structures to blend in with the landscape. Much of the Red Desert Watershed Management Area would be managed as VRM Class III to retain the existing character of the landscape. These classifications would have a beneficial effect by maintaining the resource integrity for which the areas were designated.

The Pinnacles Geographic Area, including the geologic feature, would be managed as part of the Red Desert Watershed Management Area. The Pinnacles Geologic Feature would be an exclusion area for ROWs, closed to salable mineral activities, and classified as a VRM Class II area. These restrictions would protect resources within this area, preserving unique geologic features from surface disturbing and disruptive activities.

The implementation prescriptions for SMAs would have direct beneficial effects on the resources of those SMAs and thus would indirectly benefit the continued management of these areas as SMAs. As stated above, the potential impacts of implementing these management prescriptions are discussed in the separate resource management categories.

The West Sand Dunes Archaeological District is a significant heritage resource and is eligible for inclusion in the NRHP under Criterion D as a result of the scientific information the area has been demonstrated to possess. Establishment of the West Sand Dunes Archaeological District as an SMA under this alternative focuses attention on management prescriptions intended to protect these scientific values while still allowing activities in the area. The management approach recognizes that the most important scientific information will likely be found in buried soil horizons, sometimes called paleosols, and that traditional surface inventories are not likely to find the most important archeological manifestations. Establishing the SMA also provides some approaches designed to find deposits and guidance for managing important deposits, to preserve or retrieve the scientific information they contain.

4.11 AIR RESOURCES

Air resources managed by the BLM include air pollutant concentrations, visibility, and atmospheric deposition. Air quality is mainly determined by air pollutant emissions, meteorology, and terrain. Air quality impacts are based on federal and state laws and regulations. National Environmental Policy Act (NEPA) and FLPMA require that federal activities not violate federal laws and regulations. The conformity clause of the 1990 amendments to the Clean Air Act further require that federal activities be substantially in conformance with state and local air quality regulations. Air quality in the JMH CAP planning area (and throughout Wyoming) is regulated by the Wyoming Department of Environmental Quality (WDEQ).

4.11.1 Potential Impacts on Air Quality

WDEQ Air Quality Division (AQD) regulates air quality impacts in terms of their potential for exceeding National Ambient Air Quality Standards (NAAQS), federal Prevention of Significant Deterioration (PSD) increments, and Wyoming Ambient Air Quality Standards (WAAQS) as described in Chapter 3 of this document. Potential impacts would be significant if the NAAQS or WAAQS were exceeded, an existing air quality violation were further aggravated, PSD increments for Class I or Class II areas were exceeded, increased toxin concentrations were above designated thresholds, atmospheric deposition impacts were above terrestrial voluntary guidelines (3–5 kg total nitrogen per hectare/year; 5 kg total sulfur per hectare/year) or above aquatic levels of acceptable change (10 percent change in acid neutralizing capacity), or visibility impacts on sensitive areas were above the designated 0.5 and 1.0 deciview (dv) change threshold. A significant impact on air resources might require mitigation before a permit could be issued by the state.

Air quality modeling of regional impacts was performed in 1999 for the Pinedale Anticline Project in Sublette County. The JMH planning area was included in the impact analysis of this air quality modeling. In examining whether the BLM activities in the JMH planning area would result in the exceedence of any of these air quality standards, it has been assumed that the results of that modeling remain valid. A detailed description of this air quality analysis is given in the Pinedale Anticline Oil and Gas Project Final Environmental Impact Statement and associated documents.

The air quality modeling for the Pinedale Anticline Project included an analysis of emissions from the projected construction, well drilling, and operation of 500 to 700 wells in the Pinedale area. The modeling also included a cumulative analysis of emissions from projected development of 7,211 wells in surrounding areas in the model domain of southwestern Wyoming, north-central Utah, and northwestern Colorado. Impacts were analyzed in terms of local impacts of individual wells or well fields on their immediate vicinity (near-field impacts) and in terms of effects on distant Clean Air Act Class I areas (far-field impacts).

4.11.1.1 Common to All Alternatives

Many land use activities on BLM land result in emissions to the air. Air emissions are associated with oil and gas exploration and production activities for which the BLM leases land and minerals. Vehicles from daily traffic, OHVs, recreationists, hunters, industry, and livestock operators using BLM lands are also air emission sources.

Oil and gas operations result in air emissions associated with site construction, well drilling and completion, and operation of production facilities, including separators, dehydrators, tanks, and compressors. Workover and repair operations could also result in short-term, temporary (fugitive) emissions. The primary pollutants that would be emitted during oil and gas operations include carbon monoxide (CO), volatile organic compounds (VOC), sulfur dioxide (SO_2), nitrogen oxides (NO_X), and particulate matter (PM). Drilling, completion, and repair activities all result in short-term emissions, while emissions associated with operation of production facilities are ongoing throughout the life of a producing well.

Input information for the Pinedale Anticline Project air quality modeling included meteorological data and emission source information throughout the model domain. Simulations were run to evaluate the contribution of existing sources, projected Pinedale Anticline sources (500 to 700 wells and compressors), and cumulative sources (7,211 wells and compressors) in the region. The cumulative impact modeling included existing and reasonably foreseeable new sources. The CALPUFF modeling system was used for the cumulative (far-field) impacts. The model simulations predicted regional concentrations of pollutants and calculated air quality impacts on the sensitive areas (PSD Class I and sensitive Class II areas) throughout the region (Figure A15-13).

Emission rate estimates from the Pinedale Anticline Project included assumptions for projected oil and gas development in the JMH CAP planning area, including emission factors, number of wells, and horsepower (hp) of compression. In 1999, it was assumed that 110 new wells would be drilled in the JMH CAP planning area and that approximately 3,480 hp of compression (based on 60 hp per producing well) would be used. Only NO_X emissions were calculated for far-field impacts because particulate matter (PM_{10}) and SO_2 were expected to be negligible. The emission factors used were 0.065 tons of NO_X per well per year, for wells, and 1.5 grams NO_X per brake-horsepower hour, for compressors. Except for the number of wells, which is discussed later, these are still considered to be reasonable assumptions.

The model predictions of air quality impacts from the projected Pinedale Anticline sources were significantly less than existing sources for all pollutants. Furthermore, the predicted emissions from cumulative sources were in compliance with the NAAQS and the WAAQS for all pollutants. The projected maximum impact of cumulative sources for annual NO_X emissions was 0.03 micrograms per cubic meter ($\mu g/m^3$), which was less than 1 percent of background concentration (9 mg/m3) and well below the ambient standards (Figure A15-1).

In the Pinedale Anticline cumulative impact analysis, 110 wells and compressors were within the JMH CAP planning area. This is 1.5 percent of the 7,211 total sources. The Hydrocarbon Occurrence and Development Potential Report for the JMH CAP planning area (Appendix 13) projected a maximum of 132 producing wells over the planning period, which would represent a 1.8 percent increase if the cumulative sources were unchanged. Even though it would be reasonable to assume that there are new sources in the model domain since 1999, it is also likely that not all estimated wells or compressors continue to operate. Because the annual NO_X concentration from cumulative sources was determined to be 0.03 $\mu g/m^3$ the difference between 110 and 132 wells in the JMH CAP planning area is unlikely to result in an appreciable change in the concentration. Because the cumulative impacts predicted by the Pinedale Anticline modeling are significantly less than background concentrations, ambient air quality standards, and PSD requirements, and because the changes since 1999 are small, additional air quality modeling to account for the revised Hydrocarbon Occurrence and Development Potential Report for the JMH CAP planning area is not necessary.

The Pinedale Anticline Project modeling also calculated visibility impairment in PSD Class I areas in the model domain. Visibility was estimated in terms of change in deciview from background visibility (this measure of visibility was described in Chapter 3). The model results reported two thresholds of visibility change: days with greater than 1.0 dv change and days with greater than 0.5 dv change. The U.S. Forest Service (USFS) uses 0.5 dv as a threshold of acceptable change in visibility in sensitive areas, whereas a 1.0 dv change is the threshold in the U.S. Environmental Protection Agency (EPA) regional haze regulations. The model results for cumulative emissions predicted that the PSD Class I area nearest to the Pinedale Anticline Project, Bridger Wilderness, would experience 9 days of visibility with a change of greater than 0.5 dv. There were no areas where visibility change exceeded 1.0 dv. As noted above, the model input includes weather data. The visibility results indicated that some of these 9 days of greater than 0.5 dv change in visibility were attributable to meteorological conditions. These preliminary model results suggest that impacts from cumulative emission sources could be significant. However, because emission sources within the JMH CAP planning area represent only 1.8 percent of those analyzed for the Pinedale Anticline, visibility impacts from proposed activities within the JMH CAP planning area are not anticipated to be significant. As noted above, the analysis for the Pinedale Anticline included only 110 wells versus 132 wells for the JMH CAP planning area; however, given the change in pollutant concentrations previously described, the addition of 22 wells would likely have little effect on the visibility modeling results.

The air pollutant emissions used in the above discussion are comparable to those expected from the maximum projected development alternative (Alternative 1) for the JMH CAP planning area. Because no significant impacts on air resources were indicated under this scenario, no significant impacts would be expected under the lesser development scenarios of the No Action Alternative, Alternative 2, Alternative 3, or the Proposed JMH CAP.

4.12 SOCIOECONOMICS

The socioeconomic analysis focuses on three resource uses of the planning area: livestock grazing, recreation, and oil and gas development. The area of economic influence used for this analysis includes the counties of Sweetwater, Fremont, and Sublette, even though most of the planning area is located within Sweetwater County. The potential impacts discussed under this section are relative to this area of influence.

4.12.1 Significance Criteria

Significance criteria for socioeconomic impacts were determined by analyzing long-term trends and fluctuations for certain important economic variables, including total employment, total earnings, and mineral ad valorem taxes associated with natural gas production. This analysis evaluated the long-term trends to determine the approximate changes likely to occur in these variables under existing conditions. Annual deviations from the trend over this 20-year period are considered the threshold of what can be tolerated by the regional economy for these three variables. Any changes beyond these thresholds would likely have significant impacts on local communities.

Figure 13 summarizes total annual employment for the study area between 1979 and 1999 and shows that total employment followed a slightly increasing trend (5 percent) during the study period. The trend analysis also shows that the regional economy has experienced cyclical fluctuations in employment. Therefore, although total employment increased over time, it is reasonable to assume that in any given year, total employment may have deviated by 10 percent above the trend to 12 percent below the trend (+4,600 jobs to –5,400 jobs). The error bars on the graph show a 10 percent confidence interval for each data point.

Deviations in total employment, as measured by the historical trend, were used to define the threshold of significance for this analysis. Thus, if employment impacts due to changes in management associated with the JMH CAP planning area did not exceed an increase or decrease of 5 percent of the trend, the impact would not be considered significant. But it should be noted that the threshold for determining significance was reduced by at least 50 percent from the observed historical trend to ensure that fluctuations in employment resulting from management actions were carefully examined.

A similar analysis was performed on total earnings. Figure 14 summarizes the trend in real earnings for the study area between 1979 and 1999. Total earnings in the study area averaged $1.4 billion per year between 1979 and 1999 in inflation-adjusted dollars. During this time, total earnings followed a declining trend, falling by 8 percent. In addition to experiencing an overall decline in total earnings, the area has endured cyclical fluctuations in total real earnings ranging from 8 percent above the trend to 13 percent below the trend. Given this trend, the threshold of significance for total earnings was determined to be +/–3 percent of the trend (+/–$35 million).

The historic trend associated with mineral ad valorem taxes for gas production for the study area is summarized in Figure 15. The graph shows the estimated value in inflation-adjusted dollars of ad valorem taxes associated with gas production. During this time (1985–2000), ad valorem taxes fluctuated substantially from the trend (–$14 million to +$10 million). Given the importance of mineral ad valorem taxes to local government entities and the fluctuating nature of gas production and prices, the significance threshold for this variable was decreased to 5 percent above or below the trend (+/–$5 million).

4.12.2 Analysis Methods

The potential economic impacts of alternatives associated with the JMH CAP planning area were estimated using an input-output (I/O) model developed for southwest Wyoming by the University of Wyoming. I/O modeling is a mathematical accounting of the flow of dollars and commodities through a region's economy. These types of models provide estimates of how a given amount of a particular economic activity translates into jobs and income in the region.

4.12.2.1 Data Sources

The I/O model used for the JMH analysis was an updated version of the model developed for the Southwest Wyoming Resource Evaluation Report. The model uses 1996 data for Lincoln, Sublette, Sweetwater, and Uinta Counties. Although this model does not include Fremont County, this county's economy is very similar to the economic characteristics included in the model. Therefore, the model should provide a reasonable estimate of the structure of the economy for the study area. The I/O model predicts aggregate changes in employment and earnings across all counties in the study area. It is not possible to predict where these impacts would occur within each of the counties.

There may be certain businesses in Fremont County that are not represented in Sublette and Sweetwater Counties. For example, Fremont County has a livestock auction and certain implement dealers that serve ranchers using the JMH area. Although this consideration presents a challenge in using the Southwest Wyoming I/O model for this analysis, it was not considered a fatal flaw because expenditures associated with livestock auctions and implement dealers, made by ranchers using the JMH CAP planning area, are quite small relative to the agriculture sector in the area. Therefore it was determined that adding Fremont County to the model would not produce significantly different results (i.e., benefits) that would outweigh the costs of such an exercise.

All data used with the Wyoming I/O model were adjusted for inflation and converted to 1996 dollars before model runs were completed. After completion of the model runs, dollar values were converted to constant 2001 dollars for the 20-year study period (2003–2021) and discounted using a 7 percent real discount rate, as recommended by the Office of Management and Budget (OMB). The OMB recommendation for using a real discount rate of 7 percent for constant-dollar benefit-cost analysis, approximates the marginal pretax rate of return on an average investment in the private sector in recent years.

The Wyoming I/O model requires a series of inputs and assumptions specific to the study area. This includes the value of production resulting from land uses within JMH under each alternative. Interviews were conducted with BLM staff and cooperating agency partners to obtain information on current uses and how these uses might change under each alternative. This provided a physical quantitative measure of inputs necessary for the economic impact analysis (e.g., number of gas wells, AUMs, recreational visitor days.). Table 4-13 summarizes the primary data and sources used to estimate physical inputs for the I/O model.

Table 4-13. Economic Model Inputs

Use	Primary Data Inputs	Data Source
Oil and Gas Exploration and Development	• Historic production • Historic and forecasted prices • Development cost estimates • Hydrocarbon Occurrence and Development Report	• Wyoming Geological Survey • U.S. Department of Energy • Interviews with local oil and gas companies • BLM
Grazing	• Historic AUMs for cattle and sheep within JMH • Historic cattle and sheep prices (1996–2001)	• BLM • Wyoming Agriculture Statistics
Recreation	• Estimated recreation visitor days per recreational activity • Estimated recreational expenditures per activity	• BLM–RMIS Database • Wyoming Game and Fish • Wyoming Tourism Board • Colorado Off-Highway Vehicle Coalition

The estimates of inputs, including prices, were used to evaluate the potential sales from uses of the JMH CAP planning area under each alternative. This is the direct sales estimate that serves as the input into the Southwest Wyoming I/O model to obtain an estimate of total economic impact for each alternative (changes in direct, indirect, and induced income and employment). Further details on the economic impact analysis are provided in Appendix 16.

4.12.2.2 Alternatives Assumptions

The management prescriptions under each alternative could impact the uses within JMH. The estimate of socioeconomic impacts for these management prescriptions required a series of assumptions regarding future uses under each alternative. The following subsections discuss the assumptions used for this analysis.

Oil and Gas Development

An estimate of future oil and gas exploration and development was taken from the Hydrocarbon Occurrence and Development Report. Table 4-14 summarizes the total well estimates for each alternative taken from this report. Oil and gas exploration and development would be expected to increase from current conditions. This includes the conventional wells listed in Table 4-14 in addition to 25 to 50 coalbed gas development wells to be drilled under the various alternatives. Alternative 1 would allow the greatest potential for oil and gas exploration and development relative to the No Action Alternative, whereas Alternative 2 would be the most restrictive to this activity and provide the opportunity for BLM to purchase existing leases from, or exchange existing leases with, willing leaseholders in areas that should be closed to leasing for protection of sensitive resources (Appendix 16). It is assumed that under Alternative 2 special legislation from Congress authorizing the purchase or exchange of leases would be in place. The Proposed JMH CAP has the same controls on leasing and development rates as Alternative 3 and would have similar development levels and impacts.

Table 4-14. Estimated Oil and Gas Development for JMH

Alternative	Exploration Wells	Development Wells	Well Total	New Producing Wells
1	156	108	264	132
2	86	77	163	90
3	115	90	205	107
No Action	126	95	221	114
Proposed JMH CAP	115	90	205	107

Grazing

The 5-year historic average was used as a basis in developing the grazing assumptions used under each alternative. Grazing use was assumed to remain near the 5-year historic average of 11,602 AUMs (10,649 cattle and 953 sheep) except under Alternative 1, where it was assumed that grazing use would gradually increase during the study period to the fully permitted active use of 26,830 AUMs (23,627 cattle and 3,203 sheep).

Permittees have the opportunity to increase grazing use to fully permitted active use, but during the past 5 years grazing has averaged about half this permitted use. Historic use was likely impacted by a variety of factors, including weather and range condition in addition to changing economic factors that affected the ability of ranchers to use their allotted AUMs in any given year. Economic factors include fluctuating cattle prices, changes in interest rates, cost changes associated with farm machinery and supplies, import-export polices, and changes in consumer demand for beef and beef substitutes. Although permittees could use their full preference under any alternative if the Wyoming Standards for Healthy Rangelands (Appendix 10) are met, the assumption of increasing grazing use under Alternative 1 was for analysis purposes only.

The wildlife objectives proposed by WGFD for herd units that encompass the JMH CAP planning area could also impact grazing use during the study period. The elk herd objective for JMH has increased to 1,200 from the old objective of 500. This could affect the availability of forage for domestic livestock and make the possibility of increasing AUM use to fully permitted amounts less likely over the 20-year study period.

Recreation

Recreational use by alternative was estimated with a series of assumptions. These assumptions drive the changes in recreation associated with elk and greater sage-grouse hunting. Elk hunting is expected to increase, following recent hunting trends and assumptions on elk dispersion and access, under Alternatives 1 and 3 for the first part of the study period. Under the No Action Alternative, Alternative 1, and Alternative 3, greater sage-grouse hunting is expected to decline during the first part of the study period and then be eliminated as populations continue to decline. Greater sage-grouse hunting is expected to remain constant at current levels under Alternative 2. Recreational use associated with antelope and mule deer hunting was assumed to stay constant at the 5-year historic average for all alternatives.

The estimated recreation visitor days (RVD) associated with hunting deserve some additional discussion. Although management actions are aimed at managing herd units that are important for hunting, these actions may or may not affect the number of hunting days spent in the JMH CAP planning area. A management action that causes herd numbers to decline may actually increase the number of hunting days spent in the area (i.e., hunters spend more days hunting fewer animals). Thus, there may be a weak correlation between management actions that would increase or decrease herds and the number of hunting days actually spent in JMH.

OHV use would be expected to increase by 2.5 percent per year for the first half of the study period for the No Action Alternative and the Proposed JMH CAP because of improvements proposed for the Sand Dunes Recreation Area and increased interest in the planning area. However, OHV use would not be expected to follow this trend during the later part of the study period under these alternatives. Under Alternatives 2 and 3, OHV use would be expected to remain constant at the 3-year historic average or begin to decline because of access limitations and no proposed improvements to the Sand Dunes Recreation Area. Other recreational uses would be expected to increase between 1 and 2 percent per year under the various alternatives based on the prescribed management action. Further discussion of the recreational assumptions used for this analysis is provided in Appendix 16.

4.12.3 Impacts Common to All Alternatives

Under all alternatives, increased development activities are expected to generate economic benefits to the local communities near JMH. Most benefits would be the result of increased oil and gas development, although continued benefits would be realized through grazing and recreational activities. All activities are expected to support on average more than 120 jobs per year.

Although the modeling efforts do not indicate where the employment impacts would occur, it can be deduced that they would be focused in Sweetwater County, within the location of larger population centers like Rock Springs and Green River. Although the analysis shows an increase in the number of jobs supported by activities within JMH under all alternatives, it is not expected that these activities would create a boom type situation in these communities, such as occurred during the mid-1970s. This is because the expected employment supported by activities within JMH would be a combination of new jobs and the support of existing jobs in the local area. Therefore, although employment would likely increase under all alternatives, it is not expected to increase to the full estimate of average employment and thus would not cause significant changes in population for communities such as Rock Springs and Green River.

Potential earnings are also expected to increase under all alternatives during the 20-year study period because of gas development, grazing, and recreation in JMH, with gas accounting for more than 90 percent of total earnings under all alternatives. On an annual basis, total real earnings would increase by between $2.4 million and $3.3 million under the various alternatives. This equates to less than 1 percent of total real earnings in the study area for 1999 and is thus not considered significant.

Increased gas production within JMH will provide a positive fiscal impact to local communities in the form of increased mineral tax revenues. This includes federal mineral royalties, state severance taxes, and ad valorem taxes on production collected by the counties. Mineral tax revenues are estimated to increase by between $85 million and $114 million over the 20-year study period as a result of increased gas production in JMH. Although local government entities benefit from the mineral tax revenues collected on gas production within the JMH CAP planning area, the greatest impact would be due to increases in ad valorem taxes that are collected by the counties.

It is unknown what the gas production levels would be in the study area over the next 20 years. For comparison purposes, average production in the three-county area was assumed to follow historic production trends over the past 20 years. If gas production follows a similar trend, expected ad valorem taxes associated with production in JMH could account for approximately 3 to 4 percent of average ad valorem taxes associated with gas production in the study area. It is likely that most of this impact would occur in Sweetwater County, given the location of the planning area and drilling activities. Sweetwater

County, on average, has realized an estimated $18 million per year (1996$) in ad valorem taxes through gas production between 1985 and 2001. Assuming that gas production could be sustained at similar levels over the next 20 years, potential ad valorem taxes associated with production in JMH could account for approximately 6 to 8 percent of average ad valorem taxes on gas production in Sweetwater County, providing an important economic benefit to this area.

4.12.4 Potential Impacts on Employment

Potential impacts on employment are summarized in Figure 16 (see page F-11). The average annual employment supported by activities in JMH would range from 129 jobs per year under Alternative 2 to 187 jobs per year under Alternative 1. The figures indicate the dependence of jobs associated with oil and gas development for all alternatives.

4.12.4.1 No Action Alternative

Under the No Action Alternative, the average annual employment supported by activities in the JMH CAP planning area would approach 160 jobs. This accounts for less than 1 percent of total employment in the study area in 1999.

4.12.4.2 Alternative 1

Alternative 1 would have the greatest potential for increased employment of any alternative, representing a 15 percent increase from the No Action Alternative. Average annual employment supported by activities under Alternative 1 would be estimated to reach 187 jobs, with more than 80 percent of this employment occurring in the oil and gas industry. However, employment impacts would not be considered significant because Alternative 1 would be expected to support only 27 more jobs per year than the No Action Alternative. This increase in employment under Alternative 1 would be well below the established employment threshold (+4,600 jobs to –5,400 jobs) and thus would be considered insignificant for the regional economy.

4.12.4.3 Alternative 2

Alternative 2 would be expected to support, on average, 129 jobs per year. The reduction of 33 jobs per year, on average relative to the No Action Alternative would not be considered significant relative to threshold values.

4.12.4.4 Alternative 3

Annual employment supported by activities under Alternative 3 would be expected to average 151 jobs per year, which would be 11 jobs fewer than under the No Action Alternative. The decline in potential employment growth under this alternative would not be considered a significant impact when compared to threshold values.

4.12.4.5 Proposed JMH CAP

Annual employment supported by activities within JMH under the Proposed JMH CAP is estimated to average 153 jobs per year. This represents roughly nine fewer jobs supported relative to the No Action Alternative. The reduction in potential job growth caused by this alternative is not considered significant.

4.12.5 Potential Impacts on Earnings

The results shown in Figure 17 (see page F-12) represent the increase in potential earnings over the 20-year study period resulting from gas development, grazing, and recreation in JMH under each alternative. Gas development accounts for more than 90 percent of total earnings under each alternative.

4.12.5.1 No Action Alternative

Real earnings would likely increase under the No Action Alternative, largely because of the expected increase in oil and gas development. It was estimated that over the 20-year study period, activities in the JMH CAP planning area would generate $58 million in total real earnings for the regional economy. On an annual basis, total real earnings would average $2.9 million per year. This equates to less than 1 percent of total real earnings in the study area for 1999.

4.12.5.2 Alternative 1

Potential increases in total real earnings would be greatest under Alternative 1, which provides for the greatest potential for oil and gas development. Total earnings were estimated at $66 million over the 20-year study. However, the economic impacts associated with Alternative 1 would not be considered significant relative to the threshold values. Total earnings under Alternative 1 would average $3.3 million per year, which would be a 13 percent increase from the No Action Alternative, or $387,000 per year. The annual increase in earnings attributable to Alternative 1 would be well below the significance criteria (+/–$35 million) and would thus not be considered a significant impact for the regional economy.

4.12.5.3 Alternative 2

Alternative 2 would have the lowest potential for development of any alternative and thus would be expected to generate the lowest potential for increased real earnings of any alternative. Total earnings would be expected to increase, but at a reduced rate from the No Action Alternative. During the 20-year study period, total earnings would be estimated to increase by $48 million, which would be 17 percent lower than under the No Action Alternative. On average, total earnings would likely increase by $2.4 million per year, which would be $495,000 lower than under the No Action Alternative. However, this reduction in earnings would not be considered significant because the difference falls well within the threshold values.

4.12.5.4 Alternative 3

Alternative 3 would have the potential to provide $55 million in total earnings during the 20-year study period, which would be 5 percent less than the No Action Alternative would provide. On average, total earnings would increase $2.8 million per year, which would be $132,000 lower than under the No Action Alternative. However, this impact would not be considered significant because it would be well within the established threshold for changes in earnings for the regional economy.

4.12.5.5 Proposed JMH CAP

The Proposed JMH CAP has the potential to provide $55.5 million in total earnings during the 20-year study period. Potential earnings due to this alternative are 4 percent lower than those under the No Action Alternative. On average, total earnings would increase $2.8 million per year, which would be $115,000 lower than under the No Action Alternative. However, this impact would not be considered significant because it would be well within the established threshold for changes in earnings for the regional economy.

4.12.6 Potential Fiscal Impacts

Given the importance of mineral tax revenues to local and state government entities in Wyoming, the analysis also considered changes in potential mineral revenues under each alternative. Table 4-15 shows the present value of total mineral revenues received as a result of gas production from 2003 to 2022. This includes federal mineral royalties, state severance taxes, and ad valorem taxes on production collected by the counties.

Table 4-15. Total[a] Estimated Mineral Royalties and Taxes from JMH[b] (2001 dollars)

Alternative	Ad Valorem	Severance	Federal Royalties	Total Mineral Revenues
Alternative 1	$28,036,652	$26,514,289	$59,620,326	$114,171,267
Alternative 2	$20,990,289	$19,850,538	$44,636,140	$85,476,967
Alternative 3	$24,010,141	$22,706,414	$51,057,895	$97,774,450
No Action	$25,016,779	$23,658,393	$53,198,526	$101,873,699
Proposed JMH CAP	$24,010,141	$22,706,414	$51,057,895	$97,774,450

[a] Total amount for 20-year study period.

[b] This table summarizes the net present value of estimated mineral royalties and taxes by alternative. Royalties and taxes have been discounted using a real discount rate of 7 percent as recommended by OMB.

Although local government entities benefit from the mineral tax revenues collected on gas production within the JMH CAP planning area, the greatest impact would be due to changes in ad valorem taxes that are collected by the counties. Local governments within the study area receive only a percentage of federal royalties and severance taxes collected on production originating on public lands. Figure 18 (see page F-12) shows the ad valorem taxes resulting each year from potential gas production in JMH. It indicates that ad valorem taxes would be greatest for each alternative in 2006, when gas production is projected to be the highest.

4.12.6.1 No Action Alternative

Additional gas development would have the potential to increase mineral revenues to federal, state, and local government entities by $102 million over the 20-year study period. This would include additional mineral ad valorem taxes to the counties, which would average $1.2 million per year, with a high of $2.9 million in inflation-adjusted dollars during 2006.

4.12.6.2 Alternative 1

Mineral tax revenues would be expected to be greatest under Alternative 1 because of increased gas production, and might exceed $114 million over the 20-year study period. Ad valorem taxes would be expected to be $1.4 million per year, with a high of $3.1 million in 2006. Impacts on mineral revenues would be considered insignificant relative to the significance criteria (+/–$5 million). Increases in mineral ad valorem revenues would be expected to be 12 percent over the No Action Alternative, or $151,000 per year. The maximum amount of ad valorem taxes anticipated from production in JMH would be in 2006, approximately $196,000 higher under this alternative than under the No Action Alternative. This increase would be well within the established thresholds and thus not considered a significant impact on the counties.

4.12.6.3 Alternative 2

Mineral tax revenues would be expected to total $85 million over the 20-year study period. This includes almost $21 million in ad valorem taxes that would go directly to the counties in the study area. Ad valorem taxes would be estimated at $1.1 million per year, which represents a 9 percent decrease from the No Action Alternative, or approximately $100,000 per year. This impact would not be considered significant because it would be well within the established threshold for mineral ad valorem taxes at +$5 million to –$5 million.

4.12.6.4 Alternative 3

Total mineral revenues would be estimated to total $98 million over the 20-year study period. This would include $24 million in ad valorem taxes. Gas production would provide $1.2 million per year in ad valorem taxes to local counties, which would be approximately $50,000 lower than the No Action Alternative. Although mineral ad valorem taxes would be expected to be lower under this alternative relative to the No Action Alternative, the impact would not be considered significant according to the established thresholds for this area.

4.12.6.5 Proposed JMH CAP

Mineral revenues under the Proposed JMH CAP are estimated to total $98 million over the 20-year study period, including $24 million in ad valorem taxes. On average, gas production would provide $1.2 million per year in ad valorem taxes to local counties, which would be approximately $50,000 lower than under the No Action Alternative. Although mineral ad valorem taxes would be expected to be lower under this alternative relative to the No Action Alternative, the impact would not be considered significant according to the established thresholds for this area.

4.13 CUMULATIVE IMPACTS

Cumulative impacts can result from individually minor but collectively significant actions. The Council on Environmental Quality describes cumulative impacts as follows:

> *"...the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time"* (40 CFR 1500-1508).

Cumulative impacts are discussed because the quality of the human environment is the result of many different factors acting together. The real effect of any single action cannot be determined by considering that action in isolation, but must be determined by considering the likely result of that action when acting in conjunction with many others.

The cumulative impact analysis for this EIS evaluates the potential impacts associated with the JMH CAP management alternatives, in combination with the potential impacts associated with other relevant activities that have occurred, are occurring, or may occur in the vicinity of the JMH CAP planning area. After review of available information, the following types of activities have been identified as having the highest likelihood of generating potential cumulative impacts when added to activities associated with the JMH CAP management alternatives:

- BLM land management plans and activities outside the JMH CAP planning area boundary

- Regional oil and gas development activities (e.g., exploration, production, and pipeline development)
- Regional recreation activities (e.g., big game hunting, OHV) use, dispersed recreation)
- Economic development activities in Fremont, Sublette, and Sweetwater Counties
- Activities within the Green River, Sweetwater River, and Great Divide Basins.

The potential cumulative impacts are described for each potentially affected resource within a defined cumulative impact analysis area (CIAA). The CIAAs cover different geographic areas depending on the specific resource being evaluated. Evaluation of potential impacts considers incremental impacts that could occur from the proposed project, while also considering impacts from past, present and reasonably foreseeable actions (RFA) within each of the CIAAs. RFAs are those future action activities that have been committed to or that are known proposals that could take place within the 20-year planning period.

The CIAAs are described in each of the resource sections below and are shown by Maps 73 through 87. CIAAs are larger for resources that are mobile or migrate than they are for resources that are stationary. For example, the CIAA for big game is based on herd unit boundaries that contain habitats that support individual herds year-round. The air quality CIAA is extremely large because it is based on the complex interaction between climatic factors, terrain, and the potential for significant impacts in sensitive areas within the airshed. Smaller CIAAs were established for resources that are stationary, such as fire, minerals, recreation, and visual resources. In some cases, these CIAAs may follow the JMH CAP planning area boundaries.

Activities and development that occur within the CIAAs (including JMH CAP activities) have the potential to generate cumulative impacts on the specific resource being analyzed. Maps 73 and 74 show existing and reasonably foreseeable oil and gas development projects that could fall within the various CIAAs. These projects are also listed in Table 4-16, along with the number of producing wells and remaining wells that could still be developed for each of the projects should development reach the ultimate level analyzed in the appropriate NEPA document for southwestern Wyoming. These numbers represent potential development, based on the NEPA-approved totals. It is likely that these projects would not actually drill all the wells that were approved. According to the Green River RMP and Final EIS, many existing wells will cease to produce based on historic records, and more than 70 percent of existing wells will be plugged and abandoned by year 2010. However, it is anticipated that these will be replaced by new wells. Other RFAs that could cause cumulative impacts are listed in Table 4-17.

Table 4-16. Summary of Oil and Gas Development Projects Previously or Currently Being Analyzed Under NEPA in Southwestern Wyoming

Project	Date ROD/DR Signed	Producing Wells	Remaining Wells That Can Still Be Drilled
Riley Ridge	1/25/84	23	224
Burley	6/7/94	31	16
Jonah II Field	4/27/98	129	321
La Barge Coordinated Activity Plan Area	8/16/91	1,135	445
Soda Unit	4/12/89	3	18
Castle Creek	10/24/83	8	10
Moxa Arch	3/7/97	947	1,227
Hickey Mountain	5/13/87	26	50
Road Hollow	9/83	4	6
Fontenelle	8/16/96	1,052	1,141
Stagecoach	9/27/95	9	59

Project	Date ROD/DR Signed	Producing Wells	Remaining Wells That Can Still Be Drilled
East LaBarge	5/29/92	19	9
Bird Canyon	6/25/93	6	8
Bravo Unit	7/20/95	7	4
Mulligan Draw	9/23/92	17	23
Creston Blue Gap	10/4/94	234	175
Dripping Rock/Cedar Break	4/3/85	24	34
Sierra Madre	9/21/87	30	16
Hay Reservoir	6/24/92	40	2
Jack Morrow Hills	Pending	46	205
Continental Divide/Greater Wamsutter	7/20/95	328	2,685
Pinedale Anticline	7/27/2000	85	616
South Baggs	Pending	6	90
Bitter Creek Shallow Gas Project Area	Pending	14	0
Pacific Rim Shallow Gas	Pending	0	150
Copper Ridge	Pending	0	89
Vermillion Basin	8/15/02	0	56
Jonah Infill	Pending	0	1,250
Desolation Flats	Pending	0	385
South Piney	Pending	0	210
Lower Bush Creek	Pending	0	22
Seminoe Road	Pending	0	1,240
Atlantic Rim	7/26/02 6/26/02	0	2,000
Wolverine/Shell		0	1
Little Monument	Pending	0	31
Total		**4,233**	**12,818**

Table 4-17. Summary of Reasonably Foreseeable Actions

Project Title	Project Description
Wind Energy Towers	Six towers to provide meteorological information, with one tower on White Mountain.
Bridger Coal Company, Coal Lease-by-Application	Conversion of surface mining operations to underground mining in order to extend the life of the mine.
Hay Reservoir Geophysical Project	The south boundary of the proposed project lies approximately 20 miles north of I-80. It extends northward past Hay Reservoir and ends 3 miles north of Five Fingers Butte. Approximately 55% of the project area would lie in the Rock Springs Field Office, and 45% of the project would lie in the Rawlins Field Office.
Monell CO2 Pipeline Project	Proposed CO2 pipeline-related facilities along an existing pipeline from the Exxon/Mobil Shute Creek CO2 pipeline system in Sweetwater County, Wyoming, to the existing Monell Federal Unit. Proposed facilities include metering equipment, a booster station, and cathodic protection.
PacifiCorp—Point of Rocks to Rock Springs Transmission Powerline Project	Project is completed.

Project Title	Project Description
Jim Bridger Flue Pond Expansion Project	Project is completed.
South Jonah Geophysical Project	Geophysical operations using vibroseis method to collect subsurface data on 400 square miles of public land.
Quantum Geophysical Project	Project is completed.
Pacific Creek Temporary Surface Pipeline	Project is on hold.
Haystacks Geophysical Project	Geophysical operations in the Haystacks area. The project has been completed, with the exception of minor cleanup planned for spring 2004.
Wolverine Exploratory Drilling Proposal	Three exploratory wells north of Highway 28 in Sweetwater County. Two have been drilled.
Fall and Late Winter Gathering of Wild Horses	The Rock Springs Field Office is proposing to gather and remove excess wild horses in the Great Divide Basin Wild Horse HMA during the time period of February 15 to March 31, 2004.
Pioneer Pipeline Right-of-Way	Pioneer Pipeline has built a 12- to16-inch refined petroleum pipeline across federal lands in southwest Wyoming. The pipeline extends from Sinclair, Wyoming, west to an existing block valve in Croydon, Utah.
FMC's Proposed Haul Road	The modified proposal consists of a paved haul road, six pipelines, and 1 fiber-optic line from the Westvaco mine/plant site to the Granger plant site. FMC is requesting a 400-foot width for construction with a 200-foot width during operations with certain exceptions (i.e., cut and fill areas), and two bridges (cross over Union Pacific Railroad tracks and the Black's Fork River).

Table 4-17. Summary of Reasonably Foreseeable Actions (Continued)

Project Title	Project Description
Veritas DGC Land Incorporated LaBarge 3D Geophysical Project	The proposed LaBarge 3D project would be located west of LaBarge, Wyoming, in portions of Sublette and Lincoln Counties. The general project boundaries would be LaBarge Creek on the south, South Piney Creek on the north, the Calpet Highway (State Highway 235 and Sublette County Road 134) on the east, and the BLM-U.S. Forest Service boundary on the west.
Eden/Farson Irrigation Project	Furnishes an irrigation water supply for 17,010 acres in the vicinity of the towns of Farson and Eden in southwestern Wyoming. Project features include improvements to and maintenance of the reservoirs and drainage systems.
Riparian Exclosures Along the Big Sandy River, Little Sandy River, Pacific Creek, Jack Morrow Creek, and Rock Cabin Creek	Designed to enhance riparian plant communities and fishery habitats as mitigation for sheep to cattle conversions.
Bone Draw Project	Designed to increase game fish populations in the Big Sandy River.
Big Sandy Rock Sill Project	Provides artificial habitat for increasing fish populations.

4.13.1 Land and Water Resources

The land and water resource management category encompasses biological and hydrologic resources and the users and land use programs related to those resources. The significance criteria and analysis assumptions are described within each subcategory.

4.13.1.1 Fire

The CIAA used to analyze cumulative impacts on the JMH fire management program is limited to the JMH CAP planning area. Due to noncontinuous fuels, low historic fire incidence, and significant fuel breaks (e.g., highways, farmland, and county roads), fire management activities within the JMH CAP planning area would be specific to the area and would not be significantly influenced by activities occurring outside the planning area. Therefore, a description of cumulative impacts can be drawn from the analysis, presented previously in this chapter, of the impacts on the fire program resulting from other resource programs within the JMH CAP planning area. The discussion below summarizes the cumulative impact on the fire program resulting from management actions prescribed for the entire JMH CAP planning area.

Cumulative impacts on fire management are not expected to be significant. Such cumulative impacts would occur as a result of the increased development and recreation activities occurring within the planning area. As recreation, mineral development, and other construction activities (e.g., power lines and pipelines) increase as a whole over the planning area, so do the potential for wildfire occurrence and the need for fire suppression activities, which results in increased costs to the fire management program. With increased development and attendant infrastructure (power lines, compressors, pipelines, fuel tanks, etc.) comes a corresponding increase in the potential for fire suppression within the wildland-urban interface (WUI). Suppression activities within WUI areas can be more dangerous, time-consuming, and expensive than suppression in undeveloped areas. Particularly critical would be the extra caution required for firefighter safety within an active gas field. Fire management costs would increase substantially because of increased fire frequency, the additional planning and effort required for fire suppression within WUI areas, and the increased value of developed sites compared with undeveloped rangeland.

Cumulative impacts would be greatest under Alternative 1 because of anticipated increases in development activities and access. Under Alternative 2, restrictions on development and access would reduce the potential for human-caused wildfires and WUI situations, thereby minimizing cumulative impacts on fire management. Cumulative impacts under Alternative 3 and the Proposed JMH CAP would be slightly greater than under Alternative 2 because of fewer restrictions on development and access.

4.13.1.2 Water Resources

The CIAA used to analyze cumulative impacts on watershed resources and water quality extends outside the JMH CAP planning area, following sixth order watershed (12 digit) boundaries (Map 75). Major watershed boundaries within the JMH CAP planning area can be found on Map 61, Water Resources and Watersheds. The CIAA is composed of sixth order watersheds that completely or partially overlap the JMH CAP planning area. In addition to these watersheds, four drainages extending outside of the planning area were considered: Pacific Creek, Killpecker Creek, Sweetwater River, and the multiple drainages of the Red Desert. For Pacific Creek, it was assumed that beyond the confluence between the Green River and the Big Sandy, dilution by the Green River would render any influences undetectable. For Sweetwater River, the area of detectable influence was assumed to extend to the confluence of Alkali Creek, which corresponds with the fifth order (10 digit) hydrologic unit confluence. For the purposes of this analysis, detectable influences within the Killpecker Watershed were assumed to extend within the main channel of Killpecker Creek to the confluence with Bitter Creek, but would most likely be undetectable at that point in all but the most extreme situations of combined disturbance and flow, given the ephemeral nature of the channel. Influences within the hydrologically closed Great Divide Basin were assumed to extend to the lowest elevations within the basin. The sixth order watersheds and the abovementioned four drainages were used as the basic unit of analysis because impacts from management actions proposed under the Proposed JMH CAP and other existing activity plans are not expected to have cumulative hydrologic influence beyond this scale. Given that hydrologic influence is primarily focused in the stream channels and that delineation of the CIAA was based on watershed boundaries, the area of analysis is more than sufficient.

Irrigation diversions will continue to have a noticeable influence on channel dynamics and morphology. Pacific Creek, the primary stream system in the JMH CAP planning area, has been under the influence of irrigation diversions for close to 100 years. Irrigation diversions will most likely continue to be a noticeable influence in the future.

Development projects and other activities that have been mitigated to the level of no significant impact are also assumed to have no significant impact on the cumulative impact area. Although not significant, cumulative impacts would occur from all activities within the area of influence that disturb vegetation or cause soil compaction or channel overland flows, such as road and well pad construction, livestock trampling, and recreational use (especially OHV activity). Such disturbances result in accelerated soil erosion and runoff, which increase sediment and nutrient loads to local channels and lead to channel destabilization. Mineral development and livestock grazing activities would also result in water depletions to the Colorado River and Platte River drainages. This could change the nature of flows, which could alter stream dynamics and cause overall degradation of the riparian corridor (see Section 4.13.1.6 for further details).

Recreation activities are expected to increase within the JMH CAP planning area, and development activities are expected to increase throughout the CIAA, with reasonable foreseeable development of approximately 290 wells (see Table 4-16). Oil and gas projects that are located entirely or partially within the CIAA, and therefore will have cumulative impacts on watershed resources, include Lower Bush Creek, Bravo, Cedar Canyon, Stagecoach Draw, and Jack Morrow Hills (Map 73 and Map 74).

Appropriate mitigation and project design during site-specific analysis could minimize offsite sedimentation but would be dependent on design and maintenance.

Effects on groundwater quality would depend on the quality and maintenance of wells and the overall level of activity. Improper casing and cementing of wells, undetected spills, or leachate from produced water or mud pits could introduce contaminants into the groundwater. Existing development combined with reasonably foreseeable development would increase the potential for such impacts.

Cumulative impacts would be greatest under Alternative 1 because of anticipated increases in development and livestock grazing, as well as fewer restrictions on such activity. Under Alternative 2, increased restrictions on development, recreation, and livestock grazing would reduce the potential for surface disturbance and vegetation removal and any subsequent increases in erosion, runoff, and sedimentation of surface waters. Cumulative impacts under Alternative 3 and the Proposed JMH CAP would be slightly greater than under Alternative 2 because of fewer restrictions on development and recreation activities.

4.13.1.3 Wild Horses

The CIAA used to analyze cumulative impacts on wild horses includes the entire Divide Basin Wild Horse HMA, which extends southeast of the JMH CAP planning area (Map 76). The Divide Basin wild horse herd is managed to the boundaries of the HMA, and therefore could be affected by activities occurring in this area.

Cumulative impacts would occur from a combination of activities and uses occurring within the CIAA. Map 73 and Map 74 show considerable existing and future oil and gas development projects within the southern portion of the HMA. Increasing development and recreation activities, along with livestock grazing and existing wildlife, would cause soil disturbances, remove vegetation, degrade and reduce available forage, and disturb and displace wild horses. These impacts are not anticipated to be significant, given the adaptability of wild horses and the limited amount of vegetation actually removed by development activities. Impacts stemming from competition between livestock and wildlife for forage resources are expected to be mitigated by WGFD efforts to manage and control wildlife populations and by implementation of the Wyoming Standards for Healthy Rangelands.

Cumulative impacts on wild horse management would also result from the need to continually remove wild horses from outside the HMA. Currently, wild horses use habitat outside the established HMA boundaries. Total removal of these wild horses is not possible because other horses will move into these areas as horses are removed. These "outside HMA" horses will not count toward the AML for the Divide Basin Wild Horse HMA, and the need to completely remove them will continue.

Cumulative impacts would likely be greatest under Alternative 1 because of anticipated increases in development and livestock grazing, as well as fewer restrictions on such activity. Under Alternative 2, increased restrictions on development, recreation, and livestock grazing would reduce the potential for surface disturbance and vegetation removal. However, the proposal to reduce the size of the HMA under this alternative could create additional cumulative impacts if the concentration of wild horses in a smaller area caused overuse of available forage and water resources. Cumulative impacts under Alternative 3 would be similar to those under Alternative 2. Although expansion of the HMA under Alternative 3 could reduce cumulative impacts by providing additional habitat and forage for wild horses, fewer restrictions on development and recreation activities under this alternative could partially offset this benefit. Cumulative impacts under the Proposed JMH CAP would be slightly greater than under Alternative 2 or 3 because fewer restrictions on development and recreation activities would be implemented and because the HMA boundaries would not be expanded.

4.13.1.4 Livestock Grazing

The CIAA used to analyze cumulative impacts on livestock grazing includes all allotments that either entirely or partially overlap the JMH CAP planning area (Map 77). Livestock is managed to the boundaries of these allotments, and therefore could be affected by activities occurring in these areas.

Cumulative impacts would occur from a combination of activities and uses occurring within the CIAA. In addition to development activities within the JMH CAP planning area, Map 73 and Map 74 show that some existing and future oil and gas development projects are located within the eastern portion of the CIAA. Increasing development and recreation activities, along with the presence of grazing wildlife, would cause soil disturbances, remove vegetation, reduce available forage, and disturb and displace livestock. These impacts could degrade rangeland resources on some allotments and thus jeopardize compliance with the Wyoming Standards for Healthy Rangelands, which could require some operators to alter grazing practices. Implementing appropriate actions for livestock grazing management might be necessary to achieve the standards. Such actions could include, but would not be limited to, reduction of permitted AUMs, modified turnout dates, livestock water developments, range improvements, shorter grazing periods, growing season rest, riparian pastures and exclosures, implementation of forage utilization levels, and livestock conversions. For some allotments, reallocation of AUMs among livestock, wildlife, and wild horses could be required to ensure that adequate forage would be available for big game.

Cumulative impacts would likely be greatest under Alternative 1 and Alternative 2. Under Alternative 1, anticipated grazing use is assumed to increase over the planning period to the fully permitted active use amount (26,830 AUMs), which when combined with other uses and development activities, could cause considerable degradation of rangeland resources. Under Alternative 2, greater restrictions on grazing activities could adversely affect livestock operators and increase operational costs.

4.13.1.5 Vegetation

The CIAA for vegetation comprises the expanded impact analysis area used and analyzed in the Green River RMP (Map 78), which includes the entire Rock Springs Field Office. The cumulative analysis conducted as part of the Green River RMP for this area has been updated as part of the analysis for this plan and includes consideration of all vegetation types, including unique plant communities and special status plant species.

The majority of cumulative effects on vegetation within the CIAA would result from surface disturbing activities that remove vegetation, such as mineral development and associated wells, roads, pipelines, and facilities; rangeland improvements; and other such activities (e.g., geophysical exploration). Vegetation treatments in the form of prescribed burns could also affect vegetative resources. All effects would depend on the amount and timing of activities and whether the amount of activity within the CIAA outpaced the success of reclamation and revegetation efforts in disturbed areas. Impacts are not likely to be significant because of the varied spacing of activities and reclamation and revegetation efforts; however, they are likely to be long term, even with successful reclamation, because most of the native shrub communities (e.g., sagebrush) that would be impacted require in excess of 20 years to reestablish to predisturbance conditions.

Oil and gas development would have the greatest effects on vegetation resources through removal of vegetation by construction of roads and well pads. Areas of intense development, such as those northwest and southeast of the JMH CAP planning area (Map 73), would have more severe localized impacts on vegetative resources. Overall, the amount of disturbance is negligible compared to the amount of total vegetative resources within the CIAA because (1) the majority of affected vegetation types are common and widely distributed throughout the region and (2) as more wells are being drilled, reclamation of construction size to permanent size and reclamation of abandoned well acres would begin to increase. The implementation of BLM's Mitigation Guidelines (Appendix 5), restrictions on surface use, implementation of the Wyoming Standards for Healthy Rangelands and DPC objectives, and monitoring efforts would provide protection to vegetative resources and help reduce overall effects. Special status plant species, under the ESA and Wyoming BLM sensitive species guidance, would be protected by site-specific mitigation, including exclusion or avoidance of all surface disturbing activities, resulting in minimal impacts, if any, on such species.

Effects on vegetation from rangeland improvements or other possible surface disturbing activities are considered minor compared to the effects of oil and gas development and would result in only localized, short-term adverse effects on vegetative resources.

Effects from vegetation treatments in the form of prescribed burns and mechanical and chemical treatments would include a short-term increase in annual weeds and other invasive species and a short-term decrease in vegetation production. Long-term effects, however, would benefit vegetation through an increase in grass species and vegetation production from conversion of high-density sagebrush to sagebrush/grass communities.

The differences in the projected amount of surface disturbance among the management alternatives (approximately 800 acres) do not affect the overall analysis of cumulative effects on vegetative resources within the CIAA.

4.13.1.6 Wildlife

The CIAA for effects on wildlife in general is the JMH CAP planning area. Effects are discussed in Section 4.4.6 of this document. The CIAAs for big game (elk, pronghorn antelope, and mule deer), greater sage-grouse, and fisheries are all unique and are discussed in each section below.

The majority of cumulative effects on wildlife habitat within all CIAAs would result from surface disturbing and disruptive activities, such as mineral development and associated wells, roads, pipelines, and facilities; rangeland improvements; and other such activities (e.g., geophysical exploration). Effects would be in the form of habitat fragmentation and animal displacement (short or long term). Vegetation treatments in the form of prescribed burns could also affect wildlife resources, particularly greater sage-grouse. All effects would depend on the amount and timing of activities and whether the amount of activity within the CIAA outpaced the success of reclamation and revegetation efforts in disturbed areas.

Loss of vegetation due to development activities would result in a reduction in available habitat and quality of habitat and could result in increasing forage competition among grazing animals. Habitats could be made unavailable to wildlife because of human disturbance factors such as traffic, noise, or increases in livestock during sensitive time periods such as winter, parturition, nesting, and early rearing of young. Impacts on wildlife could be significant if activities were concentrated in areas of sensitive wildlife habitat and/or if increased development and surface disturbance altered existing migration corridors to the extent that access to important habitat areas was greatly reduced.

Effects on wildlife from rangeland improvements or other possible surface disturbing activities generally result in localized, short-term adverse effects on wildlife. However, water developments in areas previously not used would increase forage consumption in those areas. Impacts could be significant if these developments were created in crucial winter range or other sensitive habitats. Any loss of habitat function or habitat value in these vital, high, or BLM sensitive species habitats would be considered a significant impact.

Effects from vegetation treatments in the form of prescribed burns would include a short-term increase in annual weeds and a short-term decrease in vegetation production. Long-term effects, however, would benefit most wildlife through an increase in grass and forb species and vegetation production from conversion of high-density sagebrush to sagebrush/grass communities.

Rocky Mountain Elk. The CIAA for elk is the Steamboat Elk Herd Unit Area (Map 79). The Steamboat elk herd is very susceptible to displacement by human activities because of the lack of hiding and escape cover within the elk herd unit area. The majority of crucial winter range and parturition habitat within the herd unit is located within the JMH CAP planning area, thus signifying the importance of this area to the viability of the entire herd.

As discussed in Section 4.4.6, several studies have shown that persistent disturbance in elk sensitive habitats shifts the areas of use, weakens the tendency of elk to return to the disturbed area, and results in selection of habitat with equal or poorer quality and security. If animals returned to disturbed habitat, populations were generally lower (50 percent) and use of the habitat was unpredictable (Powell 2003; Kuck et al. 1985; Van Dyke and Klein 1996; Johnson and Wollrab 1987).

Mineral development would cause the greatest adverse effects on the Steamboat elk herd through direct loss of habitat and animal displacement. Activities occurring within the JMH CAP planning area (HS Natural Gas and Nitchie Gulch projects) and those within the elk CIAA (the Bravo Unit, Hay Reservoir, Lower Bush Creek, Stagecoach, Continental Divide/Greater Wamsutter, and Bridger Coal projects, and the Monell and Shell pipelines) constitute existing and reasonably foreseeable activities within the elk CIAA. Given what has been documented about the Steamboat elk herd in Chapter 3 and elsewhere in this chapter, along with the above determinations, these activities would likely cause displacement of animals and the selection of alternate habitats of suboptimal quality. The location of the Bravo Unit project would likely severely inhibit elk movement between winter range located just east of the project area and within the JMH CAP planning area. The locations of the Monell pipeline and the Continental Divide/Greater Wamsutter and Bridger Coal projects are expected to severely inhibit elk movement and/or displace elk from winter range between the Bridger Coal project and the Continental Divide/Greater Wamsutter project and within the JMH CAP planning area. The locations of the HS Natural Gas, Nitchie Gulch, and Cedar Canyon projects, in addition to existing leases within the migratory corridor (connectivity area) of the JMH CAP planning area, could inhibit elk movement from parturition areas to winter range located west and south of the JMH CAP planning area across Highway 191 and similar habitat within the JMH CAP planning area.

Depending on the timing of activities and the location of surface disturbance within the CIAA, the potential exists for long-term disruption of migration corridors between key habitats. If migration were disrupted and an increased amount of direct loss of habitat occurred within key habitats over the short term, particularly within the JMH CAP planning area, it is highly likely that long-term displacement of elk from these habitats would occur, resulting in a significant impact on the Steamboat elk herd.

JMH CAP Alternative 1 would result in the highest amount of surface disturbing and disruptive activities within the JMH CAP planning area because this alternative has the highest estimate of development activities and minimal restrictions on these activities within big game habitats. Alternative 1 would likely result in significant adverse effects on the Steamboat elk herd, possibly resulting in complete abandonment of the area. JMH CAP Alternative 2 would result in the least amount of surface disturbing and disruptive activities within the JMH CAP planning area because the area would be virtually closed to the majority of mineral activities and because of the closure of all big game sensitive habitats. Alternative 2 would ensure that the majority of big game habitat within the elk herd unit was protected, thus ensuring continued viability of the herd. The Proposed JMH CAP fluid mineral leasing implementation strategy could result in significant adverse effects on the Steamboat elk herd. The significance of these effects would depend on the amount, timing, and duration of development activities. There is a high potential for existing leases to block migration corridors and a clear lack of alternate habitats, (particularly parturition areas) for elk to move into as a result of development in Area 3.

Pronghorn Antelope. The CIAA for pronghorn antelope constitutes the Sublette and Red Desert Herd Unit Areas (Map 80). As stated in Chapter 3, the Sublette and Red Desert herds were below objective in 2002. The majority of antelope crucial winter range occurs within the southern portions of both herd areas, with a large portion of it around Rock Springs and along the Interstate 80 corridor.

As stated in Section 4.4.6, there are no known published studies on pronghorn antelope reactions to roads and/or disruptive human activities. Roads, fences, and pipelines do, however, fragment habitat and can impede or block antelope movement. The density at which these occur could have a significant effect on antelope migration and use of habitat.

Mineral development would have the greatest adverse effects on the Sublette and Red Desert pronghorn antelope herds through habitat fragmentation resulting from the proliferation of roads, pipelines, and wells. Of the two pronghorn populations, road proliferation has and would impact the Sublette herd unit the most. Currently, all occupied habitats have been affected, especially crucial winter ranges, where road densities average more than 2 miles of road in each square mile of crucial winter habitat (USDI 1999). Road proliferation would continue to occur with oil and gas projects in both herd units. These projects include Stagecoach, Moxa Arch, Fontenelle, LaBarge CAP, Pinedale Anticline, Jonah, Cedar Canyon, Nitchie Gulch, HS Natural Gas, and the Continental Divide/Greater Wamsutter projects. The locations of Stagecoach, Fontenelle, LaBarge CAP, Moxa Arch, Cedar Canyon, and Continental Divide/Greater Wamsutter could greatly reduce, or even eliminate, migration corridors throughout antelope crucial winter range in the CIAA.

Densities of existing active wells are also relatively high throughout the Sublette Herd Area, and the majority of the wells proposed would be drilled in the Sublette Herd Area. The new wells would further contribute to overall antelope habitat fragmentation.

Depending on the timing of activities and the location of surface disturbance within the CIAA, the potential exists for disruption of crucial winter range continuity and migration corridors between key habitats.

The differences between the JMH CAP alternatives do not greatly affect the overall analysis of cumulative effects on pronghorn antelope within the CIAA.

Mule Deer. The CIAA for mule deer constitutes the portions of the Sublette and South Wind River Herd Unit Areas and all of the Steamboat Herd Unit Area (Map 81). As stated in Chapter 3, the Steamboat herd was below objective in 2002. The South Wind River herd was also below objective in 2002, but the Sublette herd was above objective in 2002. The majority of the parturition habitat for the Sweetwater herd is within the JMH CAP planning area, thus signifying the importance of this area to the viability the herd. Approximately 50 percent of the crucial winter range for the Steamboat herd unit is within the JMH CAP planning area and the remainder is just south of the JMH CAP planning area. The majority of the crucial range for the Sublette herd is directly northwest of the JMH CAP planning area and within the CIAA.

As demonstrated in Section 4.4.6, there are few published studies on mule deer reactions to roads and/or disruptive human activities; however, like elk, mule deer tend to avoid areas of disruptive activity and are more sensitive to activity in open versus forested habitat.

Mineral development would have the greatest adverse effects on mule deer habitats within the CIAA through direct loss of habitat and animal displacement. Activities occurring within the JMH CAP planning area (HS Natural Gas and Nitchie Gulch projects) and those within the mule deer CIAA (Cedar Canyon, Bravo Unit, Hay Reservoir, Lower Bush Creek, Stagecoach, Continental Divide/Greater Wamsutter, Pinedale Anticline, Jonah, Fontenelle, and Bridger Coal projects, and the Monell and Shell pipelines) constitute existing and reasonably foreseeable activities within the mule deer CIAA. Activities within the JMH CAP planning area and Cedar Canyon project area would likely cause displacement of animals and selection of suboptimal habitats. The location of the Cedar Canyon project would likely inhibit mule deer movement between parturition areas and winter range located just southeast of the project area and within the JMH CAP planning area. Wyoming State Highway 28 is the only existing project and there are no proposed projects that would impede or disrupt movement from crucial winter range between the JMH CAP planning area and crucial winter range northwest and northeast of the JMH CAP planning area.

Depending on the timing of activities and the location of surface disturbance within the CIAA, the potential exists for long-term disruption of migration corridors between key parturition habitats. If migration were disrupted and an increased amount of direct loss of habitat occurred within parturition habitats over the short term, particularly within the JMH CAP planning area, it is highly likely that long-term displacement of mule deer from these habitats would occur, resulting in a significant impact on mule deer herds.

JMH CAP Alternative 1 would result in the highest amount of surface disturbing and disruptive activities within the JMH CAP planning area because it has the highest estimate of development activities and minimal restrictions on these activities within big game habitats. Alternative 1 would likely result in significant effects on the mule deer herds. JMH CAP Alternative 2 would result in the least amount of surface disturbing and disruptive activities within the JMH CAP planning area because the area would be virtually closed to the majority of mineral activities and because of the closure of all big game sensitive habitats. Alternative 2 would ensure that the majority of the parturition habitat within the mule deer CIAA was protected, thus ensuring the continued viability of the herds. The Proposed JMH CAP fluid mineral leasing implementation strategy would likely have significant adverse effects on mule deer herds. The significance of these effects would depend on the amount, timing, and duration of development activities. There is high potential for existing leases to block migration corridors and a clear lack of alternate habitats of equal quality for mule deer to move to as a result of the concentrated timing of development in Area 3.

Greater Sage-Grouse. The CIAA boundary for greater sage-grouse includes the Upper Green River Basin, as recommended by the WGFD Wyoming Greater Sage-Grouse Conservation Plan (2003) for local working groups (Map 82). The greater sage-grouse CIAA differs from that recommended for the local working group in that it has been cut off at I-80 because of the assumption that greater sage-grouse do not migrate across this barrier. Greater sage-grouse leks are spread throughout the CIAA.

The majority of cumulative effects on greater sage-grouse habitat within the CIAA would result from surface disturbing and disruptive activities, such as mineral development and associated infrastructure (e.g., wells, roads, pipelines, compressors, and facilities), rangeland improvements, and other activities (e.g., geophysical exploration). These activities would result in direct loss of habitat, habitat fragmentation, and animal displacement (short or long term), depending on the amount, location, and timing of activities.

Mineral development would have the greatest effects on greater sage-grouse habitats within the CIAA. Activities occurring within the Bravo Unit, Hay Reservoir, Lower Bush Creek, Continental Divide/Greater Wamsutter, Pinedale Anticline, Jonah, LaBarge CAP, Moxa Arch, and Fontenelle oil and gas projects constitute existing and reasonably foreseeable mineral activities within the greater sage-grouse CIAA. Given what has been shown in this document (in Chapter 3 and elsewhere in this chapter) about greater sage-grouse populations and the effects of human activities on them, these activities are located in the areas of greater sage-grouse lek concentration and would likely cause long-term displacement of animals through habitat loss and lek abandonment, thus contributing to current population declines and resulting in a significant impact on greater sage-grouse. Seasonal limitations for reduction of disturbance applied within a specified distance of leks (generally up to 2 miles) during breeding and nesting time have not prevented the 70 percent decline in populations in the area during the past 50 years and would not prevent further habitat loss from occurring. Adoption of the greater sage-grouse management recommendations in the Proposed Alternative and Appendix 6 should reduce, and could possibly stop, the rate of decline of greater sage-grouse in the JMH CAP planning area.

Vegetation treatments in the form of prescribed burns could also affect greater sage-grouse through removal of large areas of sagebrush, conversion of sagebrush habitats, and increases in invasive species. Provided that the use of vegetation treatments is carefully evaluated before implementation, effects of treatments should not lead to long-term displacement of greater sage-grouse and could improve habitat for greater sage-grouse in some areas.

The JMH CAP No Action Alternative and Alternatives 1 and 3 would lead to the continued decline of greater sage-grouse populations because they contain only seasonal protections of greater sage-grouse habitat. JMH CAP Alternative 2 and the Proposed JMH CAP would provide a greater amount of protection to the species and would stop or slow population declines in the area, and ensure that habitat was preserved for future use.

Fisheries. The CIAA boundary for fisheries includes all land inside the JMH CAP planning area; all Hydrologic Unit Code (HUC) Level 12 watersheds that immediately adjoin or overlap the JMH CAP planning area; and all HUC Level 12 watersheds adjacent to Pacific Creek, the Big Sandy River from Big Sandy Reservoir to the confluence with the Green River, and the Sweetwater River and its tributaries from the U.S. Forest Service boundary to the Field Office boundary (Map 83).

The health of fisheries within the CIAA is directly related to the overall health and functional capabilities of riparian resources, which in turn are a reflection of watershed health. Any activities that affect the ecological condition of the watershed and its vegetative cover would directly affect the aquatic environment. It is assumed that any substantial disturbance to soils or changes in vegetative cover would have an adverse effect on watershed health and water quality and would therefore have an adverse effect on associated fisheries. The degree of impact attributed to any one disturbance or series of disturbances is influenced by location within the watershed, time and degree of disturbance, existing vegetation, and precipitation. General effects of surface disturbances on water resources and fisheries are discussed in Sections 4.4.2 and 4.4.6, respectively.

Oil and gas development projects within the CIAA include Stagecoach, Cedar Canyon, and the Bravo Unit. Development projects (Stagecoach and Bravo Unit) that have been mitigated to the level of no significant impact are also assumed to have no significant impact on the CIAA. The Cedar Canyon project will have minimal to no impact on fisheries because of surface disturbance and timing stipulations afforded to all streams and riparian areas on BLM-administered lands. The Cedar Canyon project could, however, cause water depletions to the Colorado River through use of water for drilling activities (typically deep wells and coalbed gas wells) and thus could contribute to reduced low flows and, on a broad scale within the Colorado River Basin, peak discharges that could have negative effects on downstream species. Water depletions reduce the ability of the river system to create and maintain important habitats for these species by limiting the nutrient supply and productivity, and therefore the food supply, brought about by high spring flows. No depletions to the Platte River system are expected because no RFAs were identified within the CIAA that contributes to that system.

Fish species migration in Pacific Creek has been and continues to be blocked by dams and diversions as part of the Eden/Farson Irrigation Project (and irrigation projects in general in this area). This affects all fish species that need to migrate up the creek for spawning, including flannelmouth sucker, a sensitive species. The irrigation project also alters natural flows of the river.

RFAs that benefit fisheries include riparian exclosures along the Big Sandy River and the Little Sandy River, which would enhance riparian plant communities and fishery habitats as mitigation for sheep and cattle conversions; the Bone Draw project, which would increase game fish populations in the Big Sandy River; and the Big Sandy Rock Sill project which would provide some artificial habitat for increasing fish populations in the Big Sandy River.

4.13.2 Heritage Resources

The heritage resource CIAA consists primarily of the JMH CAP planning area, that portion the South Pass Historic Landscape ACEC outside the JMH CAP planning area, and that portion of the Point of Rocks to South Pass City expansion era road outside of the planning area (Map 84). The entire South Pass Historic Landscape ACEC consists of a corridor where four National Historic Trails cross through the area. The Point of Rocks to South Pass City expansion era road represents one of the roads that linked communities along the railroad with newly developing settlements.

Effects on heritage resources within the JMH CAP planning area are analyzed in Section 4.5. Increases in surface disturbing activities, erosion, vibration from vehicles and equipment, soil compaction, and landscape alteration could result in a loss of potential information, integrity, and cultural values. Any potential effect on heritage resources would be lessened or eliminated to the extent possible through restrictions on surface disturbing activities, and through consultation processes with the SHPO and with Native American tribal representatives.

Potential cumulative impacts on the South Pass Historic Landscape ACEC could result from increased activity in that area. Because the majority of the area surrounding the South Pass Historic Landscape ACEC is managed as the Wind River Front, the Oregon Buttes and Honeycombs WSAs, and the Red Desert Watershed, it is not anticipated that any significant cumulative impacts on the South Pass Historic Landscape ACEC would occur.

Potential cumulative impacts on the Point of Rocks to South Pass City expansion era road could result from increased use of the road inside and outside of the JMH CAP planning area. The road's physical integrity could be affected by increased use due to industrial activity and recreational use. It is not anticipated that impacts would be significant because of the protections afforded this resource.

The differences between the alternatives do not greatly affect the overall analysis of cumulative effects on heritage resources within the CIAA.

4.13.3 Travel, Access, and Realty

The travel management, access, and realty CIAA consists primarily of the JMH CAP planning area, the entire Red Desert Watershed Management Area, the North and South Table Mountains, the Cedar Canyon ACEC, and a portion of White Mountain (Map 85). The entire Red Desert Watershed Management Area contains a ROW window that might affect travel management, access, and realty resources. The North and South Table Mountain area is an NSO area, and no facilities, such as communication towers or other

ROWs, would be allowed within these features. Cedar Canyon and a portion of White Mountain are proximate to the JMH CAP planning area. White Mountain provides opportunity for communication sites and other structures to be placed within the area.

Potential adverse cumulative effects within the CIAA could arise from factors such as the restrictions placed on access and OHV use, and the locations and management of WSAs. These potential concerns limit the location of activities and development, including communication sites; alternative forms of energy, such as wind energy towers; and potential power lines. Roads associated with oil and gas development projects would also be restricted within the CIAA, particularly in the Red Desert Watershed Management Area, Cedar Canyon, and North and South Table Mountain because of restrictions in each area. All restrictions would reduce the potential for ROW locations, limit access, and limit OHV use, resulting in overall negative cumulative effects within the CIAA. Effects would not be considered significant, however, because opportunities for ROWs, reasonable public access, and OHV use would still be available. Long linear facilities such as cross-country pipelines or power line transmission lines, would likely be routed around the JMH CAP planning area and portions of the CIAA. In particular, the exclusion area within the South Pass Historic Landscape ACEC and limitations on facilities in the Red Desert Watershed would require reroutes. However, the major ROW windows established in the Green River RMP to the east and south of the CIAA would provide opportunity to locate these types of facilities.

Impacts would be least extensive under Alternative 1 because of fewer restrictions on seasonal access, OHV use, ROWs, and other surface disturbing activities. Impacts would be greatest under Alternatives 2 and 3 because of an increase in restrictions on seasonal access, OHV use, ROWs, and other surface disturbing activities. Under the Proposed JMH CAP, cumulative impacts would be greater than under the No Action Alternative because of increased restrictions on seasonal access, OHV use, ROWs, and other surface disturbing activities. The development of a transportation plan in Alternatives 2 and 3 and the Proposed JMH CAP would reduce cumulative impacts by facilitating management of travel and access.

4.13.4 Recreation Resources

The CIAA for recreation resources is the JMH CAP planning area. The analysis area was not expanded outside of the JMH CAP planning area. Effects on recreation resources within the JMH CAP planning area are analyzed in Section 4.7.

Cumulative impacts would occur as a result of increased recreation demand and uses to the point where conflicts would occur between development activities and unconfined dispersed recreation opportunities. Development activities could degrade certain recreation settings, resulting in the degradation of some recreational experiences due to increased visual impacts, noise, and concerns for public health and safety. Some hunting opportunities could also diminish in areas where development occurs, because of the displacement of animals and because of measures applied to protect public health and safety. Development and restrictions could reduce recreation opportunities for some users; however, the same restrictions could also enhance the experience of other users.

Under Alternative 1, cumulative impacts on recreation would increase because of increased development activities and fewer land resource restrictions, and because of public health and safety concerns. Under Alternatives 2 and 3 and the Proposed JMH CAP, impacts on recreation would likely decrease because of anticipated decreases in development activities, increased land resource protections, and decreases in oil and gas development. Mitigation could offset some impacts on one user group, while potentially increasing impacts on others.

4.13.5 Minerals and Alternative Energy Resources

The CIAA for minerals and alternative energy resources consists of the JMH CAP planning area because activities and resources occurring within the JMH CAP planning area are not expected to affect minerals and alternative energy resources outside of the JMH CAP planning area. Effects on mineral and alternative energy resources within the JMH CAP planning area are analyzed in Section 4.8.

The evaluation of cumulative impacts on resource development activity includes consideration of the relative changes in resource development in the planning area and nearby areas that are operated and serviced by the same economic interests. The projected activity levels in the planning area are compared to resource development and related economic activity in the other parts of the three-county area in the assessment of cumulative impacts on mineral and energy resources.

Oil and gas development is expected to increase from current conditions under the JMH CAP No Action Alternative. However, some growth in development would be prohibited or curtailed as a result of conflicts with environment-related resource values. Production would be expected to increase slightly from current levels. Restrictions on ROWs could limit operator ability to develop and move product from within the planning area and could also disrupt regional planning associated with gas collection and delivery systems.

Under JMH CAP Alternative 1, restrictions on leasing would be eased, with new leasing allowed to follow industry interest except in WSAs. Lease stipulations would consider legally protected resources but would not have additional restrictions, such as surface disturbance and timing restrictions. In addition, restrictions on ROWs and access would be eased throughout the planning area, which would increase geophysical exploration as well as improving the ability to move product to market. Local lessees and operators would greatly benefit from increased land availability and production.

Under JMH CAP Alternative 2, a number of restrictions on leasing and access would limit mineral development throughout the planning area. This includes lease stipulations, seasonal restrictions, and NSO requirements. Restrictions could have a significant impact on local lessees and operators.

Under JMH CAP Alternative 3, the amount of acreage available for leasing would increase relative to the No Action Alternative. However, restrictions on access could limit growth in mineral development throughout the planning area. This includes lease stipulations, seasonal restrictions, and NSO requirements. In addition, restrictions on ROWs could limit the ability to develop and move product from within the planning area. Although the restrictions are not expected to be as significant as those under Alternative 2, the restrictions that could be applied through adaptive management actions could have a significant impact on local lessees and operators if the activity restrictions extended far into the future.

Closure to or restrictions on leasing within Area 3 of the JMH CAP fluid mineral leasing implementation strategy (Appendix 17) could have a significant impact on individual operators by limiting growth in mineral exploration and development, causing a loss of opportunity to obtain new leases and inability of operators to block up leases or unitize existing leases in this area. Other restrictions, such as lease stipulations, seasonal restrictions, and NSO requirements, could further impact growth potential through associated compliance costs.

4.13.6 Visual Resources

The visual resource CIAA consists primarily of the JMH CAP planning area and expands out to include that portion of the South Pass Historic Landscape ACEC not located within the JMH CAP planning area

(Map 86). The entire South Pass Historic Landscape ACEC represents four National Historic Trails through the area and encompasses their associated viewsheds.

Effects on visual resources within the JMH CAP planning area are analyzed in Section 4.9. No effects on visual resources on that portion of the South Pass Historic Landscape ACEC not located within the JMH CAP planning area are expected to occur because of VRM designations within the ACEC and surrounding areas (Wind River Front, the Oregon Buttes and Honeycombs WSAs, and the Red Desert Watershed).

Cumulative impacts that enhance visual resources would likely decrease, and impacts that degrade visual resources would increase, under Alternative 1, because of fewer protections afforded to important and sensitive resources, increased development of oil and gas resources, and fewer restrictions on linear facilities. VRM Class II values in the Greater Sand Dunes ACEC area could be in jeopardy, because increased oil and gas development would add additional production facilities that could result in a VRM class reduction. Cumulative impacts that enhance visual resources would likely increase under Alternatives 2 and 3 and the Proposed JMH CAP, while impacts that degrade these resources would decrease. This is due to additional protections afforded to important and sensitive resources, decreased development of oil and gas resources, and increased restrictions on linear facilities.

4.13.7 Special Management Areas and Other Management Areas

The CIAA boundary for special management areas and other management areas includes the entire JMH CAP planning area and those portions of the Red Desert Watershed Management Area and South Pass Historic Landscape ACEC outside of the JMH CAP planning area (Map 87).

Effects on special management areas and other management areas within the JMH CAP planning area are analyzed in Section 4.10.

No potential cumulative impacts from existing or reasonably foreseeable development that would affect the designation or management of the South Pass Historic Landscape ACEC are expected because of strict restrictions on activities within the entire ACEC and management of areas surrounding the ACEC (Wind River Front, the Oregon Buttes and Honeycombs WSAs, and the Red Desert Watershed).

Potential cumulative effects from oil and gas development projects and associated wells, roads, and pipelines could occur in the Red Desert Watershed Management Area. The Bravo Unit, Lower Bush Creek, and a small portion of the Hay Reservoir and Continental Divide/Greater Wamsutter projects are located within the management area. Cumulative impacts could include degradation of visual resources, soils, watershed resources, and vegetation caused by development activities. Restrictions on surface disturbance, such as VRM Class II and III, preferred routes for ROWs, and areas of controlled surface use, within the Red Desert Watershed would reduce possible effects to a minimal level.

Cumulative impacts would be the greatest under Alternative 1 because of increased development activities. Impacts could be significant if they changed the characteristics protected by the SMA designation. Impacts would be least extensive under Alternative 2 because of decreased development activities. Impacts under Alternative 3 and the Proposed JMH CAP would be slightly greater than under Alternative 2 because of fewer restrictions on development activities.

4.13.8 Air Resources

The CIAA boundary for air includes the area for which the air quality modeling of regional impacts was performed in 1999 for the Pinedale Anticline Project in Sublette County.

Potential cumulative impacts on air quality would result from emissions from oil and gas development on existing leases in the planning area, development of new leases outside the core area, and operation of existing wells and compressors throughout the planning area. Wildland fires and prescribed burns would result in emissions of particulates and polyaromatic hydrocarbons, as well as reduced visibility. Vehicular activity could also produce emissions that would degrade air quality.

Preliminary results from air quality impact analyses for proposed projects near the JMH CAP planning area predicted that the PSD Class I area nearest to the Pinedale Anticline Project, Bridger Wilderness, would experience 9 days of visibility with a change of greater than 0.5 dv, suggesting that cumulative impacts on visibility could be significant. Other types of impacts are not anticipated to be significant. Assumptions used in far-field modeling of air quality for the Pinedale Anticline Project included maximum development for the JMH CAP planning area. Because there would be no significant impact on air resources (except for cumulative visibility impacts greater than 0.5 dv) under this maximum scenario (see Table 4-18 below), there would also be no significant impact expected under the lesser development scenarios (the No Action Alternative, Alternative 2, Alternative 3, or the Proposed JMH CAP).

Table 4-18. Summary of Potential Air Quality Impacts From Pinedale Anticline EIS

Air Quality Component	**Comment**
Air Pollutant Concentrations	
Criteria Air Pollutants	• Near-field total concentrations are in compliance with applicable NAAQS and WAAQS o Particulate matter concentrations 14–33% of standards o NO_2 concentration 9% of standard o SO_2 concentrations 10–17% of standards • Near-field project concentrations are well below applicable PSD Class II increments o PM_{10} concentrations 1–10% of increments o NO_2 concentration .6% of increment o SO_2 concentration 0–.02% of increments • Far-field total concentrations are in compliance with applicable NAAQS and WAAQS o Particulate matter concentrations 12–16% of standards o NO_2 concentration 9% of standard o SO_2 concentrations 10–17% of standards • Far-field project concentrations are well below applicable PSD Class I increments o PM_{10} concentrations 0–2.3% of increments o NO_2 concentration 0–.5% of increment o SO_2 concentration 0–.04% of increments
Visibility	
Days with > 1.0 Δdv	• Potential visibility impacts from the Pinedale Anticline Project were less than the FLAG visibility threshold • Potential cumulative visibility impacts were less than the FLAG visibility threshold
Days with > .5 Δdv	• Potential visibility impacts from the Pinedale Anticline Project were less than the USFS/NPS visibility threshold • Potential cumulative visibility impacts were greater than the USFS/NPS visibility threshold o 9 days in Bridger Wilderness o 2 days in Fitzpatrick Wilderness o 2 days in Popo Agie Wilderness o 2 day in Wind River Roadless Area
Atmospheric Deposition	
Lake Chemistry Level of Acceptable Change (LAC)	• Cumulative decreases in ANC were less than the lake chemistry LAC for sensitive lakes o 6.8% of LAC for Black Joe Lake o 8.6% of LAC for Deep Lake o 6.7% of LAC for Hobbs Lake o 4.3% of LAC for Ross Lake o 6.7% of LAC for Lower Saddlebag Lake

4.13.9 Socioeconomics

The CIAA boundary for socioeconomics is made up of Sublette, Sweetwater, and Fremont Counties, which include the JMH CAP planning area. The greatest potential for cumulative socioeconomic impacts is associated with increased oil and gas development throughout the region. Significant increases in regional oil and gas development activity in a short period of time can cause notable changes in employment and income. These variables can in turn cause significant deviations in population trends, which have detrimental effects on community services, social structures, and lifestyles. Increased oil and gas development within the JMH CAP planning area is not expected to add significantly to impacts associated with changes in regional oil and gas development. This is because the amount of development that would occur within the JMH CAP planning area is relatively small compared with other regional development activity plans. Thus, while socioeconomic impacts could occur because of increased oil and gas development, it is not expected that development within the JMH CAP planning area would significantly add to these impacts.

Socioeconomic impacts can also result from changes in recreation and grazing activities. For instance, declines in recreation due to increased conflicts, degradation of recreational experiences, or restrictions on access can have detrimental impacts on social and economic resources in the area. In addition, cumulative impacts on livestock grazing could have negative socioeconomic impacts through a reduction in available forage or an increase in operational costs.

Table 4-1. Summary of Visual Resource Management Classifications

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
VRM CLASS I					
WSAs	X	X	X	X	X
ACECs + expansions			X		
Oregon Buttes ACEC (included in WSA)	X	X	X	X	X
Red Desert Watershed			X		
Indian Gap			X		
Boars Tusk + 1-mile buffer			X		
Portion of White Mountain			X		
Freighter Gap			X		
Pinnacles Geographic Area			X	X	
Total Affected Area (in acres)	119,340	119,340	409,940	128,300	119,340
VRM CLASS II					
ACECs + expansions (except Oregon Buttes ACEC)				X	X
Steamboat Mountain Management Area					X
Steamboat Mountain ACEC (southern portion)	X				
Greater Sand Dunes ACEC	X	X			
South Pass Historic Landscape ACEC	X	X			
White Mountain Petroglyphs ACEC	X	X			
Split Rock			X	X	
Red Desert Watershed Management Area				X	
Areas adjacent to WSAs	X	X		X	X
West Sand Dunes Archaeological District					X
Continental Peak/South Pass Connecting Side Trail			X	X	
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer			X		
Portion of White Mountain				X	X
Pinnacles Geologic Feature					X
Elk crucial habitat			X		
Deer crucial habitat			X		
Antelope crucial habitat			X		
Elk birthing areas			X		
Deer birthing areas			X		
Raptor nest sites + ½- to 1-mile buffer			X		
Greater sage-grouse concentration areas			X		

Table 4-1. Summary of Visual Resource Management Classifications (Continued)

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
Greater sage-grouse winter range[1]			X		
Mountain plover aggregation areas			X		
Connectivity area			X		
Boars Tusk				X	
Total Affected Area (in acres)	181,230	146,050	177,800	265,720	199,980
VRM CLASS III					
Remainder of the planning area not designated as VRM Class I or Class II			X		
Steamboat Mountain ACEC (northern portion)	X				
Red Desert Watershed Management Area	X				X
Portion of White Mountain	X				X
Split Rock (portion not Class II)	X				X
Eden Valley	X			X	X
Total Affected Area (in acres)	117,110	0	34,600	6,090	67,240
VRM CLASS IV					
Remainder of the planning area not designated as VRM Class I, Class II, or Class III	X	X		X	X
Total Affected Area (in acres)	204,660	356,950	0	222,230	235,780

Table 4-2. Summary of Special Management Area Designations

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
RESEARCH NATURAL AREA					
Paleosol deposition area			X		
Basin big sagebrush/lemon scurfpea (within Steamboat Mountain ACEC)			X		
Cushion plant community			X		
Dunal ponds (flockets)			X		
Total Affected Area (in acres)	0	0	33,110	0	0
ACEC REMOVALS, EXPANSIONS, and DESIGNATIONS					
Steamboat Mountain ACEC removal		X			
Steamboat Mountain ACEC expansion			X	X	X
Greater Sand Dunes ACEC expansion			X	X	
Special Status Plants ACEC expansion			X	X	
Cushion Plant Community ACEC designation			X	X	
Pinnacles Geologic Feature ACEC designation			X		
Total Affected Area (in acres)	0	48,350	129,190	39,070	3,980
OTHER SPECIAL MANAGEMENT AREA DESIGNATIONS					
West Sand Dunes Archaeological District					X
Total Affected Area (in acres)	0	0	0	0	19,840

Table 4-3. Summary of Oil and Gas Leases

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
CLOSED TO NEW LEASES					
Core area	X				
WSAs	X	X	X	X	X
ACECs + expansions			X		
Red Desert Watershed Management Area			X		
Pinnacles Geographic Area			X	X	
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer			X		
National Historic Trails + ¼-mile buffer			X		
Expansion Era Roads + ¼-mile buffer			X		
Tri-Territory Marker			X		
Slopes > 20 percent			X		
Special Status Plants ACEC			X		
Greater sage-grouse concentration areas			X		
Greater sage-grouse winter range[1]			X		
Raptor nest sites + ½- to 1-mile buffer			X		
Mountain plover aggregation areas			X		
Elk crucial habitat			X		
Deer crucial habitat			X		
Antelope crucial habitat			X		
Elk birthing areas			X		
Deer birthing areas			X		
Connectivity area			X		
Area 3 (Appendix 17)					X
Sensitive resources					X
Total Affected Area (in acres)	210,050	119,340	584,420	128,300	316,570
OPEN TO LEASING CONSIDERATION					
Remainder of the planning area not closed to new leases	X	X	X	X	X
Total Affected Area (in acres)	412,290	503,000	37,920	494,040	305,770

[1] *Only sagebrush vegetation is expected to be suitable habitat.*

Table 4-4. Summary of Coal and Sodium Exploration

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
CLOSED TO EXPLORATION					
Entire planning area			X		
WSAs	X	X		X	X
Oregon Buttes ACEC (included in WSA)	X	X		X	X
Steamboat Mountain ACEC + expansion				X	
Steamboat Mountain ACEC (outside area with coal recommendation)	X				X
Steamboat Mountain Management Area (outside area with coal recommendation)					X
South Pass Historic Landscape ACEC (visible portion)	X			X	X
White Mountain Petroglyphs vista	X			X	X
Pinnacles Geographic Area				X	
Boars Tusk	X	X		X	X
Crookston Ranch	X	X		X	X
Tri-Territory Marker	X	X		X	X
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer	X			X	X
Special status plants	X				X
Special Status Plants ACEC				X	
Cushion Plant Community ACEC				X	
Raptor nest sites (active)	X			X	X
Greater sage-grouse leks + ¼-mile buffer	X				X
Greater sage-grouse leks + ½-mile buffer				X	
Total Affected Area (in acres)	272,440	119,430	622,340	306,500	319,830

Table 4-5. Summary of Coal Occurrence and Development Potential

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
CLOSED TO FEDERAL COAL LEASING CONSIDERATION					
Entire coal development potential area			X		
Sand Dunes WSA	X	X		X	X
Greater Sand Dunes ACEC (western portion)	X	X		X	X
Total Affected Area (in acres)[1]	4,960	4,960	53,310	4,960	4,960
OPEN TO FEDERAL COAL LEASING CONSIDERATION WITH NO SURFACE OCCUPANCY					
Boars Tusk	X	X		X	X
Crookston Ranch	X	X		X	X
Total Affected Area (in acres)[1]	70	70	0	70	70
OPEN TO FEDERAL COAL LEASING CONSIDERATION FOR SUBSURFACE MINING WITH CONTROLS ON SURFACE ACTIVITIES AND FACILITIES					
Greater Sand Dunes ACEC (eastern portion)	X	X		X	X
Steamboat Mountain ACEC	X				
Steamboat Mountain ACEC + expansion				X	X
Steamboat Mountain Management Area					X
Tri-Territory Marker	X	X		X	X
Raptor nest sites + ½- to 1-mile buffer	X			X	X
Raptor nest sites + ¼-mile buffer		X			
Total Affected Area (in acres)[1]	17,980	9,780	0	18,310	20,590

[1] *Acres are only those within the coal development potential area; the remainder of the planning area is not available for coal leasing consideration.*

Table 4-6. Summary of Salable Mineral Development (Mineral Material Sales)

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
CLOSED TO MINERAL MATERIAL SALES					
Entire planning area			X		
WSAs	X	X		X	X
Oregon Buttes ACEC	X	X		X	X
White Mountain Petroglyphs ACEC	X	X		X	X
Greater Sand Dunes ACEC	X	X			X
Greater Sand Dunes ACEC + expansion				X	
Steamboat Mountain ACEC	X				
Steamboat Mountain ACEC + expansion				X	X
Steamboat Mountain Management Area[1]					X
Lava rock portion of Steamboat Mountain				X	X
South Pass Historic Landscape ACEC (visible portion)	X			X	X
South Pass Historic Landscape (visible portion—1-mile viewshed)		X			
South Pass Summit	X	X		X	X
Pinnacles Geologic Feature					X
Pinnacles Geographic Area				X	
Boars Tusk	X	X		X	X
Crookston Ranch	X	X		X	X
Raptor nest sites (active)	X	X		X	X
Greater sage-grouse leks + ½-mile buffer				X	
Greater sage-grouse leks + ¼-mile buffer					X
Potential greater sage-grouse nesting habitat[2]					X
Special status plants	X	X			X
Special Status Plants ACEC				X	
Total Affected Area (in acres)	215,820	164,510	622,340	255,600	490,540

[1] *Steamboat Mountain Management Area (minus the lava rock portion) could be open to mineral material sales when required to meet other planning objectives within JMH.*

[2] *Only 50 percent of the area is expected to be suitable nesting habitat.*

Table 4-7. Summary of Locatable Mineral Development

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
WITHDRAWN FROM ALL MINERAL LOCATION					
Entire planning area			X		
Oil shale classification lands (to be revoked)	X	X		X	X
White Mountain Petroglyphs ACEC	X	X		X	X
Greater Sand Dunes ACEC (western portion)	X	X		X	X
Steamboat Mountain diamonds				X	X
South Pass Summit	X	X		X	X
Tri-Territory Marker	X	X		X	X
Crookston Ranch	X	X		X	X
Boars Tusk				X	
Indian Gap				X	
Pinnacles Geologic Feature					X
Public water reserves	X	X		X	X
Special status plants	X	X			X
Special Status Plants ACEC				X	
Raptor nest sites (active)				X	
Greater sage-grouse leks + ½-mile buffer				X	
Elk birthing areas (northern)				X	X
Total Affected Area (in acres)	151,980	151,980	622,340	160,230	155,190
WITHDRAWN FROM NON-METALLIC MINERAL LOCATION					
Coal classification lands (to be revoked)	X	X		X	X
Total Affected Area (in acres)	160,410	160,410	0	342,410	345,740

Table 4-8. Summary of Surface Disturbance and Seasonal Limitations

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
NO SURFACE OCCUPANCY					
Oregon Buttes ACEC	X		X		X
South Pass Historic Landscape ACEC (visible portion)	X				X
South Pass Historic Landscape (visible portion—5-mile viewshed)			X		
Greater Sand Dunes ACEC + expansion			X		
Greater Sand Dunes ACEC (developed recreation sites and OHV parking lot)	X				X
White Mountain Petroglyphs vista	X		X	X	X
Boars Tusk	X	X	X	X	X
Crookston Ranch + 300-foot buffer			X		
Crookston Ranch + 100-foot buffer	X	X		X	X
Indian Gap + 100-foor buffer	X	X	X	X	X
Tri-Territory Marker	X	X	X	X	X
Slopes > 20 percent			X		
Pinnacles Geographic Area					X
Special status plants	X				X
Special Status Plants ACEC			X	X	
Special status plants potential habitat			X		
Cushion Plant Community ACEC			X		
Greater sage-grouse winter range[1]			X		
Greater sage-grouse leks + ½-mile buffer				X	
Greater sage-grouse concentration areas			X		
Raptor nest sites (active)	X			X	X
Raptor nest sites + ½- to 1-mile buffer			X		
Elk birthing areas			X		
Deer birthing areas			X		
Sensitive resources					X
Total Affected Area (in acres)	74,640	830	337,330	63,840	99,060

Table 4-8. Summary of Surface Disturbance and Seasonal Limitations (Continued)

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
CONTROLLED SURFACE USE					
Wetlands, riparian areas, and 100-year floodplains + 500-foot buffer	X				X
Wetlands, riparian areas, and 100-year floodplains + 250-foot buffer		X			
Wetlands, riparian areas, and 100-year floodplains + ¼-mile buffer			X	X	
Areas adjacent to WSAs					X
Portion of White Mountain					X
West Sand Dunes Archaeological District					X
Remaining ACECs + expansions				X	
ACECs (except Oregon Buttes ACEC)					X
Steamboat Mountain Management Area					X
Steamboat Mountain ACEC + expansion^3			X		
Steamboat Mountain crucial overlap^3			X		
South Pass Historic Landscape ACEC (portion not visible)	X				X
South Pass Historic Landscape (portion not visible—5-mile viewshed)			X		
South Pass Historic Landscape viewshed (1-mile buffer)		X			
Pinnacles Geologic Feature					X
National Historic Trails + ¼-mile buffer	X		X	X	X
Expansion Era Roads + ¼-mile buffer	X	X	X	X	
VRM Class II areas	X				
Slopes > 20 percent				X	X
Slopes > 25 percent	X	X			
Greater sage-grouse leks + ¼-mile buffer	X	X			X
Potential greater sage-grouse nesting habitat^2					X
Greater sage-grouse winter range^1					X
Special status plants		X			
Special status plants potential habitat	X	X		X	X
Sensitive resources					X
Total Affected Area (in acres)	244,280	132,860	63,970	243,570	427,930

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
SEASONAL LIMITATIONS					
Elk crucial habitat	X		X	X	X

Table 4-8. Summary of Surface Disturbance and Seasonal Limitations (Continued)

SEASONAL LIMITATIONS					
Deer crucial habitat	X		X	X	X
Antelope crucial habitat	X		X	X	X
Elk birthing areas	X			X	X
Deer birthing areas	X			X	X
Raptor nest sites + ¼-mile buffer		X			
Raptor nest sites + ½- to 1-mile buffer	X			X	X
Greater sage-grouse leks + ¼-mile buffer	X			X	X
Greater sage-grouse nesting area + 2-mile buffer	X				
Greater sage-grouse potential nesting habitat[2]		X		X	X
Greater sage-grouse winter concentration areas	X				
Greater sage-grouse winter range[1]				X	X
Mountain plover aggregation areas		X			
Mountain plover aggregation areas + ¼-mile buffer			X	X	X
Total Affected Area (in acres)	388,760	273,470	261,390	399,690	476,850

[1] *Only sagebrush vegetation is expected to be suitable habitat.*

[2] *Only 50 percent of the area is expected to be suitable nesting habitat.*

[3] *Applies to portions of ACEC + expansion area that are not NSO for elk and deer birthing.*

Table 4-9. Summary of Off-Highway Vehicle (OHV) Use Designations

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
OPEN					
Greater Sand Dunes Recreation Area	X	X	X	X	X
Total Affected Area (in acres)	10,020	10,020	10,020	10,020	10,020
CLOSED					
WSAs	X	X	X	X	X
Oregon Buttes ACEC	X	X	X	X	X
White Mountain Petroglyphs ACEC	X	X	X	X	X
Wetlands, riparian areas and 100-year floodplains + 500-foot buffer			X		
Crookston Ranch	X	X	X	X	X
Boars Tusk	X	X	X	X	X
Paleosol deposition area			X		
Pinnacles Geographic Area			X	X	
Pinnacles Geologic Feature ACEC			X		
Pinnacles Geologic Feature					X
Slopes > 25 percent				X	
Slopes > 20 percent			X		
Geologic hazards			X		
Greater sage-grouse concentration areas			X		
Greater sage-grouse winter range[1]			X		
Greater sage-grouse leks + ½-mile buffer				X	
Raptor nest sites + ½- to 1-mile buffer			X	X	
Elk birthing areas			X		
Deer birthing areas			X		
Special status plants	X	X			X
Special Status Plants ACEC			X	X	
Total Affected Area (in acres)	122,590	122,590	445,200	189,580	123,940
LIMITED TO DESIGNATED ROADS AND TRAILS					
Red Desert Watershed Management Area	X			X	X
Steamboat Mountain ACEC	X				
Steamboat Mountain ACEC + expansion area				X	X
Steamboat Mountain Management Area					X
South Pass Historic Landscape ACEC (visible portion)	X			X	
South Pass Historic Landscape (visible portion—1-mile viewshed)		X			

Table 4-9. Summary of Off-Highway Vehicle (OHV) Use Designations (Continued)

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
LIMITED TO DESIGNATED ROADS AND TRAILS					
South Pass Historic Landscape ACEC					X
Pinnacles Geologic Feature	X	X			
Cushion Plant Community ACEC				X	
Remainder of the planning area not designated as Open or Closed			X		
Total Affected Area (in acres)	176,660	21,480	167,120	149,540	213,810
LIMITED TO EXISTING ROADS AND TRAILS					
Remainder of the planning area not designated as Open, Closed, or Limited to Designated Roads and Trails.	X	X		X	X
Total Affected Area (in acres)	313,070	468,250	0	273,200	274,570
LIMITED TO SEASONAL ACCESS[2]					
Elk crucial habitat	X		X	X	X
Deer crucial habitat	X		X	X	X
Antelope crucial habitat	X		X	X	X
Elk birthing areas	X			X	X
Mule deer birthing areas	X			X	X
Raptor nest sites + ½- to 1-mile buffer	X			X	X
Raptor nest sites + ¼-mile buffer		X			
Greater sage-grouse winter concentration areas	X				
Greater sage-grouse winter range[1]				X	X
Greater sage-grouse nesting area + 2-mile buffer	X				
Greater sage-grouse leks + ¼-mile buffer	X			X	X
Greater sage-grouse potential nesting habitat[3]		X		X	X
Mountain plover aggregation areas		X			
Mountain plover aggregation areas + ¼-mile buffer			X	X	X
Steamboat Mountain	X				X
Total Affected Area (in acres)	398,980	273,470	261,390	476,750	476,750

[1] *Only sagebrush vegetation is expected to be suitable habitat.*

[2] *Seasonal access limitations for the No Action Alternative and Proposed JMH CAP would be implemented on an as-needed basis.*

[3] *Only 50 percent of the area is expected to be suitable nesting habitat.*

Table 4-10. Summary of Rights-of-Way (ROW) Limitations

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
EXCLUSION AREAS					
WSAs			X	X	
Steamboat Mountain (southern portion)				X	
Face of Steamboat Mountain					X
White Mountain Petroglyphs ACEC	X	X		X	X
White Mountain Petroglyphs vista			X		
Oregon Buttes ACEC			X	X	X
South Pass Historic Landscape ACEC (visible portion)	X				X
South Pass Historic Landscape (visible portion—5-mile viewshed)			X		
Pinnacles Geologic Feature ACEC			X		
Paleosol deposition area			X		
Pinnacles Geographic Area			X	X	
Pinnacles Geologic Feature					X
Greater sage-grouse leks + ½-mile buffer				X	
Greater sage-grouse concentration areas			X		
Greater sage-grouse winter range[1]			X		
Mountain plover aggregation areas + ¼-mile buffer			X		
Special Status Plants ACEC			X	X	
Cushion Plant Community ACEC			X		
Special status plants potential habitat			X	X	
Tri-Territory Marker	X	X	X	X	X
Indian Gap			X		X
Indian Gap +100-ft. buffer				X	
Total Affected Area (in acres)	23,770	40	336,590	156,080	40,200
AVOIDANCE AREAS					
Boars Tusk	X	X	X	X	X
Crookston Ranch	X	X	X	X	X
Indian Gap	X	X			
Oregon Buttes ACEC	X	X			
Steamboat Mountain ACEC	X				
Steamboat Mountain ACEC + expansion area			X		X

Table 4-10. Summary of Rights-of-Way (ROW) Limitations (Continued)

Area	No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Proposed JMH CAP
AVOIDANCE AREAS					
Steamboat Mountain Management Area					X
South Pass Historic Landscape ACEC		X		X	
South Pass Historic Landscape ACEC (portion not visible)	X				X
South Pass Historic Landscape (portion not visible)			X		
Greater Sand Dunes ACEC + expansion area				X	
Greater Sand Dunes ACEC + 1-mile buffer	X	X			X
Greater Sand Dunes ACEC + 1-mile buffer (minus paleosol deposition area)			X		
White Mountain petroglyphs vista	X	X		X	X
West Sand Dunes Archaeological District					X
National Historic Trails + ¼-mile buffer	X	X	X	X	X
Expansion Era Roads + ¼-mile buffer	X	X	X	X	X
Greater sage-grouse leks + ¼-mile buffer	X	X			
Greater sage-grouse potential nesting habitat[2]					X
Connectivity area			X		X
Cushion Plant Community ACEC				X	
Special status plants	X	X			X
Special status plants potential habitat	X	X			X
Total Affected Area (in acres)	171,810	153,810	192,110	77,970	434,330

[1] *Only sagebrush vegetation is expected to be suitable habitat.*

[2] *Only 50 percent of the area is expected to be suitable nesting habitat.*

Table 4-11. Grazing Utilization

Species	Herd Unit Objective		Percentage of Herd Within Planning Area	AUMs Needed Within Planning Area				
	No Action Alternative	Action Alternatives		No Action Alternative	Alt. 1	Alt. 2	Alt. 3	Proposed JMH CAP
Elk	500	1,200	75% birth; 55% winter	1,081	2,595	2,595	2,595	2,595
Cattle	NA	NA	NA	10,664	23,627	10,664	10,664	10,664
Sheep	NA	NA	NA	926	3,203	926	926	926
Mule Deer	4,000	4,000	50% yearlong	3,167	3,167	3,167	3,167	3,167
Antelope	6,000	6,000	75% summer; 25% winter	2,980	2,980	2,980	2,980	2,980
Wild Horses	415-600	415-600	33% yearlong	2,118	2,118	2,118	2,118	2,118

**Estimates of AUMs were based on animal unit equivalents (AUE) specified in the Draft Environmental Impact Statement for the Proposed Grazing Management Program for the Salt Wells-Pilot Butte Area, 1983.*

*The stated AUMs for cattle and sheep are based on anticipated use (see livestock grazing assumptions in Section 4.4.4) and do not necessarily reflect actual use, which can vary according to rangeland conditions.

Table 4-12: Total Traffic Miles by Year for Oil and Gas Development (in thousands of miles)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
N. A. Large Truck	10	28	28	28	27	20	17	16	15	15	15	15	15	14	14	14	13	12	12	11	10
N.A. Medium Duty Truck	66	95	95	93	90	74	66	60	59	59	57	57	54	52	47	47	44	40	40	37	31
N.A. Pickup Truck	75	898	899	896	892	584	491	483	442	442	439	440	435	434	427	428	424	378	378	374	368
Alt. 1 Large Truck	10	30	30	30	29	22	19	18	18	18	18	18	17	16	15	14	14	14	14	13	12
Alt. 1 Medium Duty Truck	66	98	98	96	93	77	69	62	63	63	61	61	57	55	50	48	44	43	43	39	34
Alt. 1 Pickup Truck	75	984	985	983	979	670	577	569	570	570	568	568	564	520	514	470	466	464	465	460	454
Alt. 2 Large Truck	10	25	25	25	25	17	15	14	14	14	13	13	13	11	10	10	9	9	9	9	8
Alt. 2 Medium Duty Truck	66	92	92	90	87	71	63	56	56	56	55	55	51	47	42	42	38	37	37	33	28
Alt. 2 Pickup Truck	75	769	770	768	764	455	362	354	355	355	353	353	349	303	255	255	251	249	250	245	239
Alt. 3 Large Truck	10	27	27	27	26	19	16	15	15	15	14	14	14	13	13	13	12	12	12	10	10
Alt. 3 Medium Duty Truck	66	95	95	93	90	74	66	59	59	59	55	55	52	50	45	45	42	40	40	36	31
Alt. 3 Pickup Truck	75	856	856	854	850	541	449	441	442	442	395	396	391	390	383	384	380	378	378	332	326
Proposed Large Truck	10	27	27	27	26	19	16	15	15	15	14	14	14	13	13	13	12	12	12	10	10
Proposed Medium Duty Truck	66	95	95	93	90	74	66	59	59	59	55	55	52	50	45	45	42	40	40	36	31
Proposed Pickup Truck	75	856	856	854	850	541	449	441	442	442	395	396	391	390	383	384	380	378	378	332	326

CHAPTER 5—CONSULTATION AND COORDINATION

The Bureau of Land Management (BLM) completed the Green River Resource Management Plan (RMP) in 1997. Management decisions in the Green River RMP on leasing fluid minerals and on locatable minerals were deferred from a portion of the Green River Resource Area referred to as the "core" area. These deferrals were necessary because information on potential mineral leasing or locations for mining claims was not yet sufficiently developed for making sound management decisions. The core area encompasses approximately 90,000 acres. The area to be addressed and analyzed for the Jack Morrow Hills Coordinated Activity Plan (JMH CAP) includes about 622,000 acres surrounding and including the core area. This represents the cumulative impact analysis area for the activity plan, because management of the core area could affect lands outside the core area and vice versa.

The deferred mineral decisions and management of other resources in and around the core area were addressed in an original draft Environmental Impact Statement (EIS) for the JMH CAP. On January 22, 1998, BLM mailed a scoping statement to the media, governmental agencies, environmental organizations, industry representatives, individuals, landowners, and grazing permittees. The scoping statement explained the general nature of the JMH CAP planning effort and requested initial comments concerning the level of analysis, resource information, and concerns. A notice of intent (NOI) to conduct public scoping and prepare an EIS was published in the *Federal Register* on February 5, 1998. More than 190 comment letters were received during the scoping process.

Meetings, including scoping, were held with the public on February 10, February 19, and March 19, 1998, to provide information about the JMH CAP planning effort and to solicit public input. Two field tours and one additional open house were held on September 14 and October 27, 1998 (see Table 5-1 for a list of all public events). All comments received were considered in further defining the issues in the planning area and in developing and analyzing the alternatives for the original draft EIS. The original draft EIS was published in June 2000. A public review of the original draft EIS resulted in additional resource information and public comments that warranted reformulation and analysis of land management alternatives. Completion of the project was thus delayed to evaluate the comments and new information.

An NOI was published in the *Federal Register* on December 6, 2001, to formally announce that the BLM Rock Springs Field Office (RSFO) was preparing a supplemental draft EIS for the JMH CAP. The notice invited the participation of the affected and interested agencies, organizations, and members of the general public in determining the scope and significant issues to be addressed in the planning alternatives and analyzed in the EIS. Additional public involvement was solicited to help identify issues to be addressed in developing a full range of land management alternatives (see Table 5-2 for a list of all public events). This chapter describes that process as well as other key consultation and coordination undertaken for the preparation of a comprehensive, supplemental draft EIS and final EIS for the JMH CAP.

Table 5-1. JMH CAP Draft EIS (2000) Public Events

Date	Location	Type
February 10, 1998	Rock Springs	Public Meeting
February 19, 1998	Lander	Public Meeting
March 19, 1998	Rock Springs	Public Meeting

Table 5-1. JMH CAP Draft EIS (2000) Public Events (Continued)

Date	Location	Type
September 14, 1998	Field Tour	
	Rock Springs	Open House
October 27, 1998	Field Tour	
February 24, 1999	Lander	Open House
February 25, 1999	Rock Springs	Open House
July 18, 2000	Lander	Open House
July 20, 2000	Rock Springs	Open House
July 21, 2000	Field Tour	
August 22, 2000	Lander	Hearing
August 23, 2000	Rock Springs	Hearing
June 29, 2001	Request for speaker at Rotary meeting	Requested by Pati Smith, Senator Thomas's field rep and Rotarian
August 14, 2001	JMH	Tour (Sean Whitman, Jody Levin, Selia Wallace—Senator Thomas's office)
September 28, 2001	WSO	Briefing with Con Lass of Senator Thomas's office. Covered basics.
	Washington Office	Generic information sharing. JMH mentioned. See file.
October 2, 2001	WSO	Meeting to see what WOC was thinking concerning JMH; their ideas on an NCA proposal.

Table 5-2. JMH CAP Supplemental Draft EIS and Final EIS Public Events

Date	Location	Type
December 11, 2001	Lander, Wyoming	Fremont County Commissioners Meeting, Open House
December 13, 2001	Rock Springs, Wyoming	Open House
January 8, 2002	Lander, Wyoming	Public Scoping Meeting
January 9, 2002	Rock Springs, Wyoming	Meeting w/Cooperators
	Rock Springs, Wyoming	Public Scoping Meeting
January 17, 2002	Rock Springs, Wyoming	Kiwanis Meeting
February 27–28, 2002	Rock Springs, Wyoming	Meeting w/Cooperators
March 27, 2002	Rock Springs, Wyoming	Elk Study Presentation
April 3–4, 2002	Rock Springs, Wyoming	Meeting w/Cooperators
April 9, 2002	Rock Springs, Wyoming	Public Meeting
April 10, 2002	Lander, Wyoming	Public Meeting
April 17, 2002	Rock Springs, Wyoming	Sweetwater County Democrats

Table 5-2. JMH CAP Supplemental Draft EIS and Final EIS Public Events (Continued)

Date	Location	Type
April 18, 2002	Laramie, Wyoming	Wyoming Geological Survey
May 2, 2002	Rock Springs, Wyoming	Meeting w/Cooperators
May 23, 2002	Rawlins, Wyoming	Coordination with EPA
June 26–28, 2002	Rock Springs, Wyoming	Meeting w/Cooperators
August 7, 2002	Rock Springs, Wyoming	Tour with Director Kathleen Clarke
August 8, 2002	Rock Springs, Wyoming	Director Clarke Meets with Cooperators
September 19–20, 2002	Rock Springs, Wyoming	Meeting w/Cooperators
November 8, 2002	Rock Springs, Wyoming	Meeting w/Cooperators
February 10, 2003	Rock Springs, Wyoming	Meeting w/Cooperators
March 5, 2003	Rock Springs, Wyoming	Meeting w/Cooperators
March 12, 2003	Rock Springs, Wyoming	Open House
March 13, 2003	Lander, Wyoming	Open House
April 9, 2003	Rock Springs, Wyoming	Public Hearing
April 10, 2003	Lander, Wyoming	Public Hearing
June 25, 2003	Rock Springs, Wyoming	Meeting w/Cooperators
September 10–11, 2003	Rock Springs, Wyoming	Meeting w/Cooperators
February 19, 2004	Rock Springs, Wyoming	Meeting w/Cooperators

5.1 CONSULTATION AND COORDINATION

Coordination with other agencies and consistency with other plans for the initial (original) draft EIS were accomplished through frequent communications, meetings, and cooperative efforts between the BLM interdisciplinary team and involved federal, state, and local agencies and organizations. With the decision to prepare a supplemental draft EIS, BLM was provided the opportunity for participation of cooperating agencies. Coordination and consistency for the supplemental draft EIS and final EIS were therefore primarily accomplished through the assistance of cooperating agencies formally involved in the project (see Section 5.1.1 for a list of cooperating agencies and a description of their involvement).

The U.S. Fish and Wildlife Service (USFWS) was contacted in December 1998 for Endangered Species Act Section 7 consultation and threatened and endangered species lists. An updated species list was received in October 1999. As a result of this supplemental draft EIS effort, another updated species list was received in January 2002. Coordination with USFWS has also occurred throughout the process by phone.

Coordination with the Environmental Protection Agency (EPA) by phone and through various meetings has occurred throughout the JMH CAP effort since the original draft EIS. Topics discussed include comments on the original draft EIS, the adaptive management strategy, and general project updates.

5.1.1 Coordination and Consistency

Coordination with other agencies and consistency with other agency and local and state government plans were accomplished through frequent communications and cooperative efforts between BLM and involved federal, state, and local agencies. The Wyoming Governor's Clearinghouse receives 20 copies of this final EIS for review to ensure consistency with ongoing state plans. The interdisciplinary team reviews county land use plans to ensure consistency. Meetings are held with the respective county planners and commissioners to promote greater understanding of goals, objectives, and resources of both the counties and BLM. Table 5-3 summarizes all coordination actions that BLM undertakes with federal, state, and local agencies.

Table 5-3. Key Coordination Actions

Agency	Coordination/Responsibility
FEDERAL AGENCIES	
U.S. Department of the Interior	
Bureau of Reclamation (BOR)	Coordinates mineral leasing and other activities that affect lands administered by the BOR. Reviews the JMH CAP for consistency with BOR planning.
Fish and Wildlife Service (USFWS)	Reviews actions affecting threatened or endangered species of fish, wildlife, or plants. Section 7 consultation, coordination, and review.
U.S. Geological Survey (USGS)	Reviews JMH CAP for consistency with USGS planning.
Minerals Management Service (MMS)	Reviews JMH CAP for consistency with MMS planning.
U.S. Department of Agriculture	
Forest Service	Coordinates mineral leasing and other activities that affect lands administered by Forest Service. Reviews the JMH CAP for consistency with Forest Service planning. Proposed actions would also be discussed with the Wyoming State Forestry Division and other agencies involved in wildland fire management. Coordinates and cooperates with EPA and DEQ on monitoring and collection of air quality data.
Animal and Plant Health Inspection Service–Wildlife Services	Coordinate annual management plan for animal damage control activities on public lands.
U.S. Environmental Protection Agency	Coordinates with Forest Service and DEQ on monitoring and collecting air quality data. Reviews air quality monitoring data. Files *Federal Register* notices.
STATE AGENCIES	
State of Wyoming	Participates in the environmental analysis and documentation process by providing information concerning environmental issues for which the State of Wyoming has jurisdiction by law or special expertise. Provides information from state records on matters including, but not limited to, JMH CAP project impacts on air quality and Class 1 air sheds, fish and wildlife, domestic livestock grazing, social and economic impacts, minerals, and State of Wyoming permitting requirements. Cooperates in the development of watershed improvement and restoration plans. This includes a focus on restoration activities where the state has identified water bodies impaired by pollutants for which BLM through best management practices can provide positive benefits and improvements.
Wyoming DEQ	Coordinates and cooperates on water quality, development of monitoring for visibility standards and guidelines, and collecting of air quality data.
Wyoming State Forestry, Emergency Management Agency, State Fire Marshall's Office	Coordinates on management of prescribed fire and wildfire.
Wyoming Game and Fish Department	Coordinates and cooperates on vegetation manipulation projects, wildlife habitat management, and special status species.

Table 5-3. Key Coordination Actions (Continued)

Agency	Coordination/Responsibility
STATE AGENCIES	
Wyoming Department of Transportation	Coordinates and cooperates on transportation planning and highway access.
State Historic Preservation Office	Consults on compliance with Section 106 of the National Historic Preservation Act in accordance with the National Programmatic Agreement, as implemented in the Wyoming Protocol to that agreement.
COUNTY AGENCIES	
Fremont County **Sublette County** **Sweetwater County**	Participate in the environmental analysis and documentation process by providing information concerning environmental issues for which each specified county has jurisdiction by law or special expertise. Provide information on JMH CAP project impacts on domestic livestock grazing and social and economic impacts relating to each specified county.

5.1.2 Cooperating Agencies

The RSFO extended cooperating agency status to the State of Wyoming (including Sublette County, Fremont County, and Sweetwater County) for the JMH planning effort. The Wyoming Office of Federal Land Policy represents the State of Wyoming, with the following agencies designated as members:

1. Wyoming State Geological Survey
2. Wyoming Game & Fish Commission
3. Wyoming DEQ–Water
4. Wyoming Oil and Gas Commission
5. Wyoming State Engineer's Office
6. Wyoming State Lands and Investments
7. Wyoming State Forestry
8. Wyoming Department of Agriculture
9. Board of County Commissioners, Sublette County
10. State Parks and Historic Sites
11. State Historic Preservation Office
12. Wyoming Business Council
13. Wyoming Livestock Board
14. Sublette County Conservation District
15. Sweetwater County Conservation District
16. Popo Agie Conservation District.

The cooperating agencies were formally invited to participate in the development of the alternatives and to provide existing data and other information relative to their disciplines. In addition to numerous conference calls, the RSFO held meetings with the cooperating agencies to discuss the overall development of the JMH CAP and EIS. Table 5-4 provides the dates and purpose of all cooperating agency meetings held by the RSFO.

Table 5-4. Cooperating Agency Meeting Schedule

Meeting Date	Purpose
January 9, 2002	Discuss approach to the planning process and development of alternatives.
February 27–28, 2002	Discuss approach to the planning process and development of alternatives.
March 11, 2002	Work with BLM interdisciplinary team in developing alternatives.
March 18, 2002	Work with BLM interdisciplinary team in developing alternatives.
March 25, 2002	Work with BLM interdisciplinary team in developing alternatives.
April 3–4, 2002	Discuss approach to the planning process and development of alternatives.
May 2, 2002	Update the cooperating agencies on public comments concerning the alternatives and present the preliminary findings of the socioeconomic analysis and Reasonably Foreseeable Development scenario for fluid minerals.
June 26–28, 2002	Review clarifications to the alternatives, discuss assumptions used in the impacts analysis, and discuss the analysis results.
September 19–20, 2002	Present and review the Preferred Alternative.
November 8, 2002	Discuss the Preferred Alternative and present and review the Adaptive Management Implementation Strategy.
February 10, 2003	Discuss upcoming open houses and public hearings.
March 5, 2003	Discuss methods to improve the process of cooperating agency involvement. Discuss upcoming public open houses and public comments received to date.
June 25, 2003	Discuss the major issues raised by the public comments. Discuss future cooperator involvement concerning development of the final EIS.
September 10–11, 2003	Discuss and review the Proposed JMH CAP, adaptive management appendix, proposed changes concerning wilderness issues, comment response appendix, and cumulative impact analysis.
February 19, 2004	Discuss changes to the Proposed JMH CAP adaptive management strategy and provide an update on general project activities.
May 20, 2004	Final briefing prior to release of FEIS.

5.1.3 Native American Interests

As part of the general scoping process for the original draft EIS, scoping letters were sent to the Northern Arapaho, Eastern Shoshone, Shoshone-Bannock, and Ute tribes, and to the Medicine Wheel Alliance. These letters described the JMH CAP project and asked for information and input. In addition, in spring 1998, written communication was initiated with the four tribes. Letters were sent to the tribes requesting assistance in obtaining heritage resource management information for the planning area. BLM officials Bernard Weynand and Russel Tanner also met with the Medicine Wheel Alliance in June 1998. They outlined the JMH CAP planning effort to several elders at the meeting. As a result of this meeting, a tour with representatives of the Eastern Shoshone tribe was scheduled to identify the kinds of places that might be of concern to Native American peoples. A field tour was conducted with tribal representatives Haman Wise and Delphine Clair in September 1998. As a result of this tour, areas noted as "respected places" were identified. Management recommendations were identified and used in the alternative formulation process. Following the field trips, Haman Wise and Delphine Clair met with BLM staff archaeologists Russel Tanner and Terry Del Bene to discuss Native American concerns both in general and as related to several specific sites, such as rock art sites, petroglyphs, and altar and stone circle sites. Information gathered from these field trips and meetings was used in updating the BLM Heritage Resources database and in formulating management recommendations for rock art sites, the Steamboat Mountain area, Monument Ridge, Steamboat Rim, and stone circle and altar sites.

In November 1998, Tanner and Del Bene toured JMH with Eastern Shoshone elder Starr Weed and representatives Floyd Osborn and Diana Mitchell. A number of sites known to BLM were visited and general discussion occurred regarding management of sites of concern to Native American people. Mitchell commented that there should be an interpretive program that would help Native peoples appreciate the importance of their heritage.

In March 1999, letters were sent to the Eastern Shoshone, Northern Arapaho, Shoshone-Bannock, and Ute tribes asking for comments on the JMH draft EIS. No responses to these letters were received.

Since 1986, Native Americans (i.e., Haman Wise, John Tarnesse, and Delphine Clair) have been taken on tours of sites in the RSFO area that could be of concern to Native Americans relative to proposed developments. The other tribes (Northern Arapaho, Shoshone-Bannock, and Ute tribes) are known to have had a major presence in the area in historic times (i.e., 1650–1900) and have been invited to participate in all of the tours. However, they either did not respond to the invitation or indicated that the Eastern Shoshone could take the "lead."

As part of the process for developing the supplemental draft EIS and the final EIS, a letter was sent to the Eastern Shoshone Business Council on March 26, 2002, notifying it that BLM was updating information for developing the JMH CAP. The letter also provided a history of the Native American consultation associated with the earlier JMH CAP planning efforts and requested additional information, comments, and concerns regarding all issues (not just heritage resource issues). As of July 2002, no response had been received from the Business Council.

On June 30, 2003, BLM again sent certified letters to the Eastern Shoshone, Northern Arapaho, Shoshone-Bannock, Ute, Crow, and Comanche tribal councils asking them to identify places of concern to them and requesting the names and contact information for any other persons with whom the councils would like BLM to consult concerning sacred sites or other places of concern to members of their tribes. BLM followed up on these letters with a series of telephone calls to tribal councils. No new information was provided by any of the tribal councils.

Eastern Shoshone Chairman Vernon Hill responded to BLM telephone contact by scheduling a meeting for BLM representatives to meet with the Shoshone and Arapaho Joint Business Council on August 20, 2003. Five BLM staff persons briefed the council members present at the meeting concerning the planning process, the consultation process, known places of concern to Native Americans and other issues, including wildlife habitat management. The council members asked a number of questions. Although no new information was given to BLM concerning specific places of concern, the meeting provided an excellent opportunity for BLM and tribal council members to meet and discuss these issues.

On September 27 and October 3, 2003, a BLM representative joined public tours of the Jack Morrow Hills to discuss places of concern to Native Americans. These tours mainly involved members of the Arapaho and Shoshone tribes, including several Arapaho tribal council members. The BLM representative discussed known places of concern to Native Americans, including White Mountain Petroglyphs and the Indian Gap Trail. Again, no new information was provided to BLM; however, these tours provided yet another opportunity for BLM to reach out to Native American people to strengthen ongoing consultation relationships.

On October 16, 2003, a slide show and lecture concerning sites of concern in the Jack Morrow Hills and archaeological issues in general was presented for the Eagle Staff Runners (a tribal youth group) at Wyoming Indian High School at Ethete, Wyoming. No new information was presented to BLM, but previously identified concerns were reinforced.

BLM staff archeologist Russ Tanner was invited to present a slide program to a fifth grade class at Wyoming Indian Middle School in Ethete, Wyoming (on the Wind River Reservation), on November 24, 2003. The slides and lecture concerned both sites in the Jack Morrow Hills and archaeological and anthropological issues in general. The 25 students and teachers present asked many good questions. No new information was presented to BLM. However, the students indicated a high interest in their own cultures, especially rock art sites.

5.2 PUBLIC PARTICIPATION

5.2.1 Public Meetings

5.2.1.1 Information Open Houses

Two open houses were held in Lander and Rock Springs, Wyoming, on December 11 and 13, 2001, respectively. There were approximately 115 attendees at the meeting in Lander and 85 at the meeting in Rock Springs. After publishing the supplemental draft EIS, two additional open houses were held in Rock Springs and Lander, Wyoming, on March 12 and 13, 2003, respectively. There were approximately 30 attendees at the meeting in Rock Springs and 70 at the meeting in Lander.

The format of the open houses was informal, with stations organized around the room according to the resource areas and issues identified during the workshops and the scoping conducted previously by BLM. The stations displayed various geographic information system (GIS) inventory maps for the different resources and included the general location and relief maps of the JMH CAP planning area, cultural resources, minerals, geological resources, wildlife and vegetation resources, special management areas, recreation areas, and the planning process. Attendees viewed the stations and had one-on-one conversations with BLM and Booz Allen Hamilton staff about their questions and concerns. All attendees were encouraged to provide written comments.

5.2.1.2 Scoping

A public scoping notice was prepared and mailed to federal, state, and local agencies; interest groups; and members of the general public on December 18, 2001. The mailing lists were compiled from the lists for the initial scoping process and original draft EIS, and included a total of 645 entities. The notice invited the public to participate in the scoping process and to comment on the planning criteria.

Public scoping meetings were held in Lander and Rock Springs, Wyoming, on January 8 and 9, 2002, respectively. There were approximately 84 attendees at the meeting in Lander and 77 at the meeting in Rock Springs. The format for the scoping meetings was similar to that of the information open houses, except that handouts were available at each of the stations summarizing the comments and issues concerning the specific resource as heard from the public, and a list of questions was posed on the management of the resources. A PowerPoint® presentation was also given at two different times during the meeting by the Assistant Field Manager of the RSFO. The presentation explained the purpose of public scoping and the background of the JHM CAP planning process.

A total of 325 comment letters were received and entered into a database. There were 1,356 issues/comments identified from the 325 comment letters. The top issue categories were minerals, grazing, and wildlife. A summary of these comments was then compiled as the "Jack Morrow Hills Coordinated Activity Plan Final Scoping Report, January 2002," which can be viewed at: www.wy.blm.gov/rsfo.

5.2.1.3 Preliminary Draft Alternative Meetings

The RSFO hosted two public meetings to present the preliminary draft alternatives and to request the public's review and comment. The public meetings were held in Rock Springs and Lander, Wyoming, on April 9 and 10, 2002, respectively. There were approximately 83 attendees at the meeting in Rock Springs and 92 at the meeting in Lander. The format for the preliminary draft alternative meetings was similar to that of the information open houses and scoping meetings, except that handouts were available on each of the preliminary alternatives. A PowerPoint presentation was given by Booz Allen Hamilton overviewing the development of preliminary alternatives, followed by a question and answer session. A third-party facilitator was used to promote the involvement of all interested parties.

5.2.2 Public Hearings

Two public hearings were held in Rock Springs and Lander, Wyoming, on April 9 and 10, 2003, respectively. There were approximately 102 attendees at the hearing in Rock Springs, with 56 providing official testimony. Of the 138 attendees at the Lander hearing, 65 provided official testimony.

The public hearings were conducted to provide the public an opportunity to comment on the JMH CAP and EIS. Attendees registered at the door of the hearing facility and indicated whether they would be providing official testimony. It was explained to the attendees that the purpose of the hearing was to provide an opportunity to receive comments on the JMH CAP and EIS, and that it was not a question and answer session. All attendees who provided testimony were asked to proceed to the microphone and provide their full name, affiliation (if any), and comments. Because of the number of attendees wishing to provide testimony, time limits of 5 and 3 minutes were set for Rock Springs and Lander, respectively. All oral comments submitted at the hearings were recorded and included in the official transcript for the hearings.

5.2.3 Public Comments

A total of 69,471 public comments were received via written, e-mail, Web-based, and oral communication (public hearings) from members of the public, governments, governmental agencies, and nongovernmental agencies. Comments received at public hearings were considered written comments based on the official public transcript taken. All comments were reviewed and evaluated for response as outlined in BLM Manual H-1790-1. Detailed responses to substantive comments are provided in Appendix 19. All comment letters that contain substantive information are included in their entirety in Appendix 19A (presented on enclosed CD).

The number of comments received via each media source is as follows:

- 60,288 e-mail comments
- 53 Web-based comments
- 9,130 written comments.

The large majority (>99 percent) of e-mail comments are "form letter" type comments. Of the 60,288 e-mail comments received, 60,020 are form letter comments. The primary resource values and uses discussed in the e-mail comments include minerals management, wildlife habitat, recreation, livestock grazing, wilderness values, travel and access management, and Native American values. The Web-based comments discuss various issues and topics, including existing gold claims, livestock grazing, new road construction, off-highway vehicle (OHV) use, travel and access, vegetation reclamation, and Native American values. The written comments also included 8,638 "form letter" type comments received in postcard format. The written comments include discussion of all resource values and uses.

5.2.4 Mailing List

The mailing list for public scoping was compiled from the lists for the initial scoping process and original draft EIS, and included a total of 645 entities. The mailing list has been continually updated since the initial scoping period for the original draft EIS and will be a basis for the distribution of the final EIS (see Section 5.3).

5.2.5 Newsletters

The February 2002 JMH CAP Update provided basic background information on the JMH CAP project, a scoping summary, an outline of the JMH CAP process, an update on JMH CAP alternatives development, and a general location map of the JMH CAP planning area.

The April 2002 JMH CAP Update notified those on the mailing list of the preliminary draft alternative meetings on April 9 and 10, 2002, in Rock Springs and Lander, Wyoming. The newsletter also requested comments from the public on the preliminary draft alternatives and notified the public of the dates of the 30-day public comment period.

The November 2002 JMH CAP Update provided information on the visit to the JMH CAP planning area by BLM Director Kathleen Clarke and updated the public on where BLM was in the planning process. The newsletter also notified the public that the supplemental draft EIS would be available in CD format or hard copy, and that requests for copies should be sent to the RSFO.

The November 2003 JMH CAP Update included a message from the new Rock Springs Field Manager and updated the public on changes they will see between the supplemental draft EIS and the final EIS and where the BLM was in the planning process. The newsletter also notified the public that the final EIS would be available in CD format or hard copy, and that requests for copies should be sent to the RSFO.

5.2.6 Web Site

The BLM Wyoming Web site has a link to the JMH CAP. The public can view current JMH CAP information and obtain documents, contacts, and other relevant project information. The Web site address is www.wy.blm.gov/rsfo.

5.3 DISTRIBUTION LIST

Federal Agencies

Department of the Interior

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Reclamation
- Fish and Wildlife Service
- U.S. Geological Survey
- National Park Service
- Minerals Management Service
- Office of Environmental Affairs

Department of Agriculture
- Forest Service
- Natural Resource Conservation Service

Department of Commerce
Department of Defense
Department of Energy
Department of Housing and Urban Development
Department of Transportation
Environmental Protection Agency

State of Wyoming

Department of Environmental Quality
Game and Fish Department
Geological Survey of Wyoming
Governor of Wyoming
State Clearinghouse
State Department of Transportation
State Engineer
State Historic Preservation Office
University of Wyoming
Wyoming Recreation Commission
Wyoming State Forestry

Federal Elected Officials

Congresswoman Barbara Cubin
Senator Craig Thomas
Senator Mike Enzi

State Elected Officials

Senators and Representatives of Fremont, Sublette, and Sweetwater Counties

Local Governments

County governments of Fremont, Sublette, and Sweetwater Counties
Cities of Green River, Rock Springs, Lander, and Superior

Tribal Councils

Northern Arapaho
Eastern Shoshone

Shoshone-Bannock

Ute Tribal Councils

Industry

Anadarko

Black Butte Coal Co.

Bridger Coal Company

Chevron USA, Inc.

ExxonMobil

Hunt Oil

Marathon Oil Co.

Pacific Power

PacifiCorp

Questar Corporation

Questar Pipeline Co.

River Gas Corporation

Texaco Inc.

Texas Gulf, Inc.

Associations and Interest Groups

American Humane Association

Animal Protection Institute of America

Biodiversity Conservation Alliance

Defenders of Wildlife

Environmental Defense Fund

Fund for Animals

Greater Yellowstone Coalition

Independent Petroleum Association of Mountain States

National Wildlife Federation

Natural Resources Defense Council

Oregon-California Trails Association

Petroleum Association of Wyoming

Public Lands Advocacy

Rock Springs Grazing Association

Sierra Club

Southwest Wyoming Industrial Association

Sweetwater Economic Development Association (SWEDA)

The Nature Conservancy

Wilderness Society

Wyoming Outdoor Council
Wyoming Wildlife Federation

Others

All individuals who submitted a request

5.4 LIST OF PREPARERS

Table 5-5. List of Preparers

Name	Job/Project Title	JMH CAP Responsibility
	BLM Rock Springs Field Office	
Michael R. Holbert	Field Manager	Review
Stan McKee	Field Manager	Review
Ted Murphy	Assistant Field Manager	Review
Bernie Weynand	Assistant Field Manager	Review
Hank Castillon	Assistant Field Manager	Support Services
Rey Adame	Public Affairs Officer	Public Affairs
Sherry Blackburn	Geologist	Solid and Locatable Minerals, Geologic Hazards, Groundwater
Lance Brady	GIS Specialist	GIS Data
Fred Crockett	Geologist	Fluid Minerals
Renée Dana	Resource Advisor	Project Coordination
Susan Davis	Petroleum Engineer	Fluid Minerals
Teri Deakins	Environmental Protection Specialist	NEPA Compliance
Shelly Devoss	Physical Scientist	Surface Disturbance, Reclamation, Hazardous Materials
Dennis Doncaster	Hydrologist	Watershed, Surface Water
Bob Fischer	Engineer	Engineering Support, Transportation
Jo Foster	Outdoor Recreation Planner	Recreation, Visual Resources, Off-Highway Vehicle Use, Wilderness, Transportation
Jim Glennon	Botanist	Vegetation, Woodlands, Sensitive Plants
Patricia Hamilton	Realty Specialist	Lands, Access, Realty
John Henderson	Fisheries Biologist	Riparian, Wetlands, Fisheries
Lorraine Keith	Wildlife Biologist	Wildlife, Threatened and Endangered Species
John MacDonald	Natural Resource Specialist	Soils
Lance Porter	Rangeland Management Specialist	Rangelands
Jim Procarione	Mining Engineer	Adaptive Management

Table 5-5. List of Preparers (Continued)

Name	Job/Project Title	JMH CAP Responsibility
Angelina Pryich	Writer/Editor	Editing
George Schoenfeld	Environmental Scientist	Surface Disturbance, Reclamation, Hazardous Materials
Thor Stephenson	Rangeland Management/Wild Horse Specialist	Wild Horses, Fire
Dean Stilwell	Geologist	Fluid Minerals
Russ Tanner	Archaeologist	Heritage Resources
David Valenzuela	Geologist	Assistant Team Leader, Solid and Locatable Minerals, Geologic Hazards, Groundwater
BLM Wyoming State Office		
Roy Allen	Economist	Socioeconomics
Susan Caplan	Physical Scientist	Air Quality
Janet Kurman	Environmental Protection Specialist	Environmental Coordination
Dale Hanson	Paleontologist	Paleontology
Roger Lawrence	Visual Information Specialist	Illustrations/Cover
Sheri Morris	Printing Specialist	Typesetting, Printing
Larry Neasloney	GIS Specialist	GIS Technical Assistance, Mapping
Joe Patti	Natural Resource Specialist; Field Planning Coordinator	WSO Planning and NEPA Technical/Policy Guidance, Coordination among Field and WSO Staffs
Cathy Simmons	Printing Technician	Typesetting, Printing
Andy Tenney	Outdoor Recreation Planner	Recreation, Visual Resources, Off-Highway Vehicle Use, Wilderness, Transportation
Booz Allen Hamilton		
David Baxter	Project Manager	Project Management
Dean Bibles	Senior Advisor, Public Lands	Quality Assurance/Quality Control
Tonia Bleecher	Deputy Program Manager, Public Lands	Quality Assurance/Quality Control
Michael Ghazizadeh	Geologist	Mineral Resources
Joel Hanson	GIS Specialist	GIS Data, Mapping
Greg Kloberdanz	Planning Specialist	Cultural Resources, Transportation, Visual Resources
Bryan Klyse	Environmental Planner	Land and Water Resources, NEPA Compliance
Robert Lane	Program Manager, Public Lands	Quality Assurance/Quality Control

Table 5-5. List of Preparers (Continued)

Name	Job/Project Title	JMH CAP Responsibility
Amy Lovelady	GIS Specialist	GIS Technical Assistance
Colleen Maguire	GIS Specialist	GIS Data, Mapping
Lisa McDonald	Economist	Socioeconomics
Kasey Pearson	Deputy Project Manager	Land and Water Resources, NEPA Technical/Policy Guidance
Stuart Strum	Geologist	Mineral Resources
Lloyd Tabing	Planning Specialist	Special Management Areas, Transportation, and Recreation Resources
Marshall Worthey	GIS Specialist	GIS Data, Mapping
Margo Goldman	Senior Editor	Editing
Louise Price	Editor	Editing
Carolyn Quinn	Editor	Editing
Ellen Loeb	Editor	Editing
Linda Billard	Editor	Editing
Jody Belleman	Desktop Publisher	Desktop Publishing

ACRONYMS

ACEC	Area of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
AIRFA	American Indian Religious Freedom Act
AML	Appropriate Management Level
AMP	Allotment Management Plan
ANC	Acid Neutralizing Capacity
APD	Application for Permit to Drill (an oil or gas well)
APHIS	Animal and Plant Health Inspection Service (USDA)
ARPA	Archeological Resource Protection Act
AUE	Animal Unit Equivalent
AUM	Animal unit month
BBLS	Barrels (a measure of the quantity of condensate)
BCF	Billion cubic feet (a measure of quantity of natural gas)
BEA	Bureau of Economic Analysis
BLM	Bureau of Land Management
CAP	Coordinated Activity Plan
CASTNet	Clean Air Status and Trends Network
CDNST	Continental Divide National Scenic Trail
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
CIAA	Cumulative Impact Analysis Area
COA	Condition of Approval
CRMP	Cultural Resource Management Plan
CSR	Channel stability rating
CSU	Controlled Surface Use
DBH	Diameter at Breast Height
DEQ	Department of Environmental Quality
DPC	Desired Plant Community
EA	Environmental Assessment
EIS	Environmental Impact Statement
EJ	Environmental Justice
FLPMA	Federal Land Policy and Management Act (of 1976)

FMU	Forest management unit
FR	Federal Register
FTE	Full-time equivalent
GIS	Geographic Information System
GRBAC	Green River Basin Advisory Council
GRRA	Green River Resource Area
GRRMP	Green River Resource Management Plan
HMA	Herd Management Area
HMP	Habitat management plan
IBLA	Interior Board of Land Appeals
IM	Instruction Memorandum
IMPROVE	Inter-Agency Monitoring of Protected Visual Environments
JMH	Jack Morrow Hills
KGS	Known geologic structure
KSLA	Known sodium leasing area
LAC	Level of Acceptable Change
MBF	Thousand board feet (a measure of timber volume)
MCF	Thousand cubic feet
MFP	Management Framework Plan (pre-FLPMA BLM land use plan)
MMBF	Million board feet (a measure of timber volume)
MMCF	Million cubic feet
MMS	Minerals Management Service
MOU	Memorandum of Understanding
MSL	Mean sea level
NAAQS	National Ambient Air Quality Standards
NADP	National Atmospheric Deposition Program
NCA	National Conservation Area
NEPA	National Environmental Policy Act (of 1969)
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NNL	National Natural Landmark
NOI	Notice of Intent
NPS	National Park Service
NRA	National Recreation Area
NRHP	National Register of Historic Places

NSO	No Surface Occupancy (a stipulation on an oil and gas lease)
NWPS	National Wilderness Preservation System
OHV	Off-Highway Vehicle
OMB	Office of Management and Budget
ORV	Off-Road Vehicle
PAH	Polyaromatic Hydrocarbon
PFC	Proper Functioning Condition (of riparian/wetland areas)
PM	Particulate Matter
PRLA	Preference Right Lease Application
PSD	Prevention of Significant Determination
R&PP	Recreation and Public Purposes Act
RAMP	Recreation Area Management Plan
RFA	Reasonably Foreseeable Action
RFD	Reasonably Foreseeable Development
RNA	Research Natural Area
RCRA	Resource Conservation and Recovery Act (1976)
RMIS	Recreation Management Information System
RMP	Resource Management Plan (BLM land use plan under FLPMA)
ROD	Record of Decision
ROS	Recreational Opportunity Spectrum
ROW	Right of Way
RSFO	Rock Springs Field Office
RVD	Recreational Visitor Day
SHPO	State Historic Preservation Officer
SMA	Special Management Area
SRMA	Special Recreation Management Area
SWEDA	Sweetwater Economic Development Association
T&E	Threatened and Endangered
TCLP	Toxicity Characteristic Leaching Procedure
TCP	Traditional Cultural Places
TDS	Total Dissolved Solids
USDA	United States Department of Agriculture
USDI	United States Department of the Interior
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

VOC	Volatile Organic Compound
VRM	Visual Resource Management
W&SR	Wild & Scenic River(s)
WAAQS	Wyoming Ambient Air Quality Standards
WARMS	Wyoming Air Resources Monitoring System
WGFD	Wyoming Game and Fish Department
WHHA	Wild Horse Herd Area
WO	Washington Office
WS	Wildlife Services
WSA	Wilderness Study Area
WUI	Wildland-Urban Interface
WYDEC	Wyoming Department of Environmental Quality
WYDOT	Wyoming Department of Transportation
WYNDD	Wyoming Natural Diversity Database

GLOSSARY

ACTIVE DUNE. A hill or accumulation of sand shaped by wind. A dune is active when constantly changing form under wind currents. Generally, an active dune is bare of vegetation.

ACTIVE LEK. Any lek that has been attended by male sage-grouse during the strutting season.

ACTIVE RAPTOR NESTING SITE. An active raptor nest is one that has been occupied within the past 3 years.

ACTIVE GREATER SAGE-GROUSE LEK. Any lek that has been attended by male sage-grouse during the strutting season. Presence can be documented by observation of birds using the site or by signs of strutting activity.

ACTIVE USE. The current authorized use, including livestock grazing and conservation use. Active use may constitute a portion, or all, of permitted use. Active use does not include temporary nonuse or suspended use of forage within all or a portion of an allotment.

ADAPTIVE MANAGEMENT. A systematic process for continually improving management policies and practices by learning from the outcomes of actions over time. It employs management programs that are designed to continuously compare selected policies or practices and is an integrated method for addressing uncertainty that focuses on implementing actions, thoroughly monitoring results, and modifying actions when warranted. It recognizes that the complex interrelationships of physical, biological, and social components of the ecosystem and how they would react to land management practices are often not fully understood when land-use management plans are developed.

ALLOTMENT. An area allocated for livestock use by one or more qualified grazing permittees including prescribed numbers and kinds of livestock under one plan of management.

ANIMAL INN. An information and education program focused on the value of dead, dying, and hollow trees for wildlife and fish. Animal Inn is an awareness-building program, not a regulatory program.

ANIMAL UNIT MONTH (AUM). The amount of forage to sustain one mature cow or the equivalent, based on an average daily forage consumption of 26 pounds of dry matter per day. The equivalent animal units for other ungulate species, based on a weight conversion (3 percent body weight per day), are 10.5 for antelope, 7.6 for deer, 2.1 for elk, 1.2 for moose, 0.9 for wild horses, and 5.2 for sheep.

APPROPRIATE MANAGEMENT LEVEL (AML). The optimum number of wild horses that provides a thriving natural ecological balance on the public range.

AQUIFER. A saturated, permeable sediment or rock that can transmit significant quantities of water under hydraulic gradients.

AREA OF CRITICAL ENVIRONMENTAL CONCERN (ACEC). Areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources, or other natural systems or processes, or to protect life and safety from natural hazards. The identification of a potential ACEC shall not, of itself, change or prevent change of the management or use of public lands.

AVOIDANCE AREA (for Rights-of-Way). Areas on public lands where future rights-of-way may be granted only when no feasible alternative route or designated right-of-way corridor is available.

AVOIDANCE AREA. An area where the preferred strategy for managing surface disturbing and disruptive activities is to avoid sensitive resources. Activities would be relocated. Where avoidance is determined not to be feasible, intensive mitigation to prevent adverse effects to the sensitive resource would be required. The extent of avoidance areas may vary, depending on the sensitive resources involved.

BADLAND. Surface features characterized by sharp erosional scar sculpture of weak rocks, forming steep, furrowed, and fantastically shaped hills, labyrinth-like drainage patterns, and normally dry watercourses.

BIODIVERSITY. See Biological Diversity.

BIOLOGICAL DIVERSITY. The variety of life and its processes, including the variety of living organisms, the genetic differences among them, and the communities and ecosystems in which they occur.

CANDIDATE SPECIES. A plant or animal species whose numbers are declining so rapidly that official listing as threatened or endangered pursuant to Section 4 of the Endangered Species Act may become necessary as a conservation measure. Declines may be due to one or more factors, including destruction, modification, or curtailment of the species' habitat or range; over-utilization for commercial, sporting, scientific, or educational purposes; disease or predation; the inadequacy of existing regulatory mechanisms; or other factors.

CASUAL USE. Activities that involve practices that do not ordinarily lead to any appreciable disturbance, change, or damage to lands, resources, and improvements. For example, activities that do not involve use of heavy equipment or explosives and that do not involve vehicular movement except over established roads and trails are casual use.

CHECKERBOARD LAND PATTERN. Alternating sections of federally owned lands and private or state lands on either side of the Union Pacific railroad in southwestern Wyoming. This pattern of land ownership looks like a checkerboard on maps, using different colors to show land status.

CHERRYSTEMMED. Term describing a WSA boundary that is drawn around a dead end road or other linear feature to exclude it from the WSA.

COALBED GAS (OR COALBED METHANE). Adsorbed gas stored in micropores, cleats, and the molecular structure within coal beds. In coalbed gas accumulations, hydrostatic pressure exerted on the adsorbed gas is a primary trapping mechanism. The gas itself is almost entirely methane and commonly contains small amounts of other hydrocarbons, hydrogen, carbon monoxide, carbon dioxide, and nitrogen.

CONDITIONS OF APPROVAL (COA). Conditions or provisions (requirements) under which a site-specific surface disturbing or human presence activity (e.g., application for permit to drill (APD), sundry notice, ROW) is approved. COAs must be reasonable and consistent with lease rights.

CONNECTIVITY AREA. A key wildlife habitat area that connects and includes crucial big game habitats. The area includes topographic relief for escape cover, important year-round forage, crucial winter range, and birthing areas for a majority of the deer and elk populations. The area allows for free movement of animals among the various habitat components and provides an important migratory corridor throughout the year.

CONSUMPTIVE USE. Recreation activities that consume natural resources. Hunting and fishing are regarded as consumptive recreation because wildlife species are consumed. Rockhounding is consumptive because nonrenewable resources are removed.

CONTROL LINE. Comprehensive term for all constructed or natural barriers and treated fire edges used to control a fire.

CONTROLLED SURFACE USE (CSU). A stipulation that allows use and occupancy (unless restricted by another stipulation), but that requires special operational constraints that may modify the lease rights, for identified resource values. Controlled surface use serves as operating guidance, not as a substitute for the NSO or timing limitation stipulations.

CRUCIAL HABITAT (RANGE). Can describe any particular seasonal range or habitat component (often winter or winter/yearlong range in Wyoming) that has been documented as the determining factor in a population's ability to maintain itself at a certain level (theoretically at or above the population objective) over the long term. For example, the total crucial winter range for an elk herd unit should be available, relatively intact, and allow a population at objective to survive the winter in adequate body condition and to maintain average reproductive rates 8 out of 10 years.

CURRENT ANNUAL GROWTH. The amount of forage produced by a plant in one growing season.

DESIRED FUTURE CONDITION. A future land or resource condition that achieves a set of compatible multi-resource goals and objectives.

DESIRED PLANT COMMUNITY. The plant community that provides the vegetation attributes required for meeting or exceeding RMP vegetation objectives. The desired plant community must be within an ecological site's capability to produce these attributes through natural succession, management action, or both (BLM Wyoming Instruction Memorandum 91-290, 5/29/91).

DISRUPTIVE ACTIVITIES. The physical presence, sounds, and movements of people and their activities (on, below, or above the land surface) that may cause displacement of or excessive stress to wildlife during critical life stages (breeding, nesting, birthing) or during periods of severe weather conditions. Examples of disruptive activities include noise, traffic, human presence, well drilling, and seismic and other exploration activity.

DISTURBANCE ZONE. Area of influence around a disturbance causing a change in animal behavior such as leaving the area, increased stress, abandoning young, not breeding, and aberrant behavior. Examples of disturbances include road construction and road use, facility construction and placement, pipeline construction, field facility maintenance, rights-of-way construction, and range improvement construction.

DROUGHT. A prolonged chronic shortage of water, compared with the norm, often associated with high temperatures and winds during spring, summer, and fall or a period without precipitation during which the soil water content is reduced to such an extent that plants suffer from lack of water.

ECOLOGICAL CONDITION. See Ecological Status.

ECOLOGICAL STATUS. As defined in the BLM's monitoring manuals: "the present state of vegetation of a range site in relation to the potential natural community for the site. Ecological status is use independent. It is an expression of the relative degree to which the kinds, proportions, and amounts of plants in a plant community resemble that of the potential natural community. The four ecological status classes correspond to 0–25, 26–50, 51–75, or 77–100 percent similarity to the potential natural community and are called early seral, mid seral, late seral, and potential natural community, respectively (this replaces range condition)."

EOLIAN ICE-CELLS. Perennial ice formed from snowfall and insulated from summer heat by a cover of windblown sands. This ice feeds small ponds (flockets) within the dunes.

EPHEMERAL STREAM. A stream that flows only in direct response to precipitation, and whose channel is above the water table at all times. See Intermittent Stream and Perennial Stream.

ERODIBILITY. The tendency of a soil to erode as influenced by texture under specified salts, structure, or slope.

EXCLOSURE. Study or experimental plot rested from livestock grazing. A portion of land rested from livestock grazing. Exclosures may be established as study or experimental areas or as protection for key habitats.

EXCLUSION AREA. Areas where future rights-of-way may be granted only when mandated by law.

EXISTING ROADS AND VEHICLE ROUTES. Routes existing prior to the date of designation, constructed or created by the frequent passage of motor vehicles, and receiving regular and continuous use. Additional vehicle routes may be authorized, as need dictates.

EXTIRPATION. Elimination.

FINE FUELS. Fast-drying dead fuels, generally characterized by a comparatively high surface area-to-volume ratio, which are less than 1/4 inch in diameter and have a time lag of 1 hour or less. These fuels (i.e., grass, leaves, needles, etc.) ignite readily and are consumed rapidly by fire when dry.

FIRE MANAGEMENT PLAN. Statement, for a specific area, of fire policy, objective, and prescribed action; may include maps, charts, tables, and statistical data.

FIRE SUPPRESSION. All work and activities associated with fire-extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

FLOCKETS. A local term for the ponds and associated wet meadows created in the sand dunes from melting eolian ice cells.

FLUID MINERAL. Oil, gas, and geothermal resources.

FORAGE. Vegetation of all forms available and of a type used for animal consumption.

FORBS. Any broad-leafed herbaceous plant, other than grasses, sedges, and rushes. These are generally flowering plants with tap roots, broad leaves, netlike veins, and solid non-joint stems.

FOREGROUND. A view, usually from a heritage-based key observation point, such as a traditional cultural property or respected place, that takes in about a 270-degree span of influence. Topography, vegetation, and intrusions and barriers (both manmade and natural) are considered in identifying the viewshed area and are taken into consideration in development and analysis of appropriate measures.

FUEL LOAD. Oven-dry weight of fuel per unit area (usually expressed in tons/acre).

FUEL TREATMENT. Any manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control (e.g., lopping, chipping, crushing, piling, and burning).

FULL-TIME EQUIVALENT (FTE). A measurement of employment that is not equal to jobs or persons; rather, it is based on hours worked (e.g., one person full time or two people half time both equal one FTE).

FUNCTIONAL—AT RISK. Riparian-wetland areas that are in functional condition, but an existing soil, water, or vegetation attribute makes them susceptible to degradation (Prichard, et al., 1993). In addition, see Non-Functional and Proper Functioning Condition.

GAS WELL DENSITY. As defined in the Wyoming Oil and Gas Conservation Commission rules, Chapter 3. Section 2. (b), the area: "Any gas wells drilled in the area described as Township 12 North through Township 28 North and Range 89 West through Range 121 West shall be located in the center of a one hundred-sixty (160) acre subdivision, or lot or tract or combination of lots or tracts substantially equivalent thereto, not closer than one thousand one hundred-twenty feet (1,120') to the exterior boundaries of the quarter section. All areas subject to existing orders for drilling and spacing units in the above described area shall be exempt from the aforesaid gas well location requirements. Further, this rule is vacated for all federal exploratory units in the above described area provided that no gas well will be drilled closer than one thousand one hundred-twenty feet (1,120') to the exterior boundaries of the unit nor to any uncommitted acreage within the unit. Upon unit contraction, lands deleted from the unit shall thereafter be subject to this rule."

GREATER SAGE-GROUSE CONCENTRATION AREA. Greater sage-grouse leks, nesting habitat, and early and late brood-rearing habitat.

GREATER SAGE-GROUSE SUITABLE HABITAT. Habitat fitting the characteristics described in Table 3-14. These parameters may be adjusted based on site-specific analysis and variables (e.g., weather). For information on other habitat types see Greater Sage-Grouse Management Practices (Appendix 6).

GREATER SAND DUNES RECREATION AREA. The active sand dunes in the eastern portion of the Greater Sand Dunes ACEC. This area (10,020 acres) is open to off-highway vehicle use.

GROWING SEASON. In temperate climates, that portion of the year when temperature and moisture are usually most favorable for plant growth.

HABITAT. A specific set of physical conditions in a geographic area(s) that surrounds a single species, a group of species, or a large community. In wildlife management, the major components of habitat are food, water, cover, and living space.

HAZARDOUS MATERIAL. A comprehensive term adopted by BLM to include a wide range of hazardous and toxic substances and hazardous wastes that require special management.

HERBICIDE LOADING. The process of transferring, mixing, and other processing of chemicals and associated cleaning of equipment; does not include the actual application procedures used in accordance with label instructions.

HERITAGE RESOURCES. Physical remains of human activity (i.e., artifacts, ruins, burial mounds, petroglyphs, etc.) having scientific, prehistoric, or social values.

HISTORIC LANDSCAPE. A geographic area, including both historic and natural features, associated with an event, person, activity, or design style that is significant in American history.

HISTORIC LEK. A lek that has been active during at least one strutting season within the last 10 years.

HISTORIC RAPTOR NESTING SITE. An area of high topographic relief, particularly cliff areas, known to have supported concentrations of nesting raptors, such as Cedar Canyon, Four-J Basin, and Kinney Rim.

HUMAN-CAUSED FIRE. Any fire caused directly or indirectly by person(s).

HUNTER-DAY. A unit of measure defined as the presence of one person in an area for the purpose of engaging in a hunting activity during all or part of one calendar day.

HYDRIC SOIL. A soil that is saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper part.

HYDROPHOPIC SOILS. Water-repellant soils.

HYDROPHYTE. Any plant that grows in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content; plants typically found in wetlands and other aquatic habitats.

HYDROPHYTIC VEGETATION. Plant life growing in water or on a substrate that is at least periodically deficient in oxygen as a result of excessive water content.

IMPACT. Synonymous with effect. Includes ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Impacts may also include those resulting from actions that may have both beneficial and detrimental (adverse) effects. Impacts may be considered as direct, indirect, or cumulative:

Direct: Impacts caused by an action that occur at the same time and place as the action itself.

Indirect: Impacts caused by the action that occur later in time or farther removed in distance, but that are still reasonably foreseeable.

Cumulative: Impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions.

INACTIVE LEK. Leks where it is known that there was no strutting activity through the course of a strutting season.

INHOLDING. A non-federal parcel of land that is completely surrounded by federal land.

INTERDISCIPLINARY TEAM (IDT). Any necessary combination of BLM staff, consultants, contractors, other governmental personnel, and advisors to achieve an interdisciplinary approach.

INTERMITTENT STREAM. A stream that flows only at certain times of the year when it receives water from springs or from some surface source such as melting snow in mountainous areas. See Ephemeral Stream and Perennial Stream.

INVASIVE. A non-native species (with respect to a particular ecosystem) whose introduction does or is likely to cause harm to the economy, environment, or human health.

JEOPARDIZE. To engage in an action that reasonably would be expected, directly or indirectly, to reduce appreciably the likelihood of both the survival and recovery of listed species in the wild by reducing the reproduction, number, or distribution of a listed species or otherwise adversely affecting the species.

LEASABLE MINERALS. Minerals subject to lease by the Federal Government; include oil and gas, coal, phosphate, sodium, potash, and oil shale, as well as geothermal resources.

LEASE NOTICE. Notices (not to be confused with Notices to Lessees) that are attached to leases and that provide detailed information concerning limitations that already exist in law, lease terms, regulations, or operational orders. A Lease Notice also addresses special items the lessee should consider when planning operations but does not impose new or additional restrictions.

LEK. A traditional courtship display and breeding area attended by male sage-grouse in or adjacent to sagebrush-dominated habitat.

LOCATABLE MINERALS. Minerals subject to disposal and development through the Mining Law of 1872 (as amended). Generally includes metallic minerals such as gold and silver and other materials not subject to lease or sale.

MANAGEMENT BY MONITORING AND ADJUSTING. A management strategy employed in many resource areas to adjust resource usage to conditions and impacts. The condition of the planning area resources is evaluated to determine whether additional use is compatible with achieving management goals or objectives. The impacts of the new or expanded use are acceptable or require mitigation.

MECHANIZED VEHICLES. Mechanical transport designed to replace human labor and/or human physical capabilities. Mechanized vehicles include mountain bikes, horse-drawn wagons, big game carriers, handcarts, and hang gliders.

MINERAL POTENTIAL. The ability of land to produce minerals, which falls into three categories:

High: Applies to those lands currently producing oil or gas or having high current industry interest.

Moderate: Applies to those lands that have had oil and gas shows in favorable geologic environments.

Low: Applies to those lands where either the geologic environment appears to be favorable for the accumulation of oil and gas, or where little or no information is available to evaluate the oil and gas potential.

MINIMUM HEIGHTS. The amount of plant material remaining during the grazing season.

MODIFICATION. A fundamental change in the provisions of a lease stipulation, either temporarily or for the term of the lease. A modification may include an exemption from or alteration to a stipulated requirement. The modification may or may not apply to all other sites within the leasehold to which the restrictive criteria apply.

MOSAIC. A landscape composed of patches of discrete ecological sites and/or seral stages in a variety of sizes and shapes.

MOUNTAIN PLOVER AGGREGATION AREA. An area with two or more observations, (within 2 miles of each other during one breeding season) of one of the following: territorial adults nests, adult distraction displays, or broods.

MULTIPLE USE. As defined in section 103 of the FLPMA, "... management of the public lands and their various resource values so that they are utilized in the combination that will best meet the present and future needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; the use of some land for less than all the resources; a combination of balanced and diverse resource uses that takes into account the long-term needs of future generations for renewable and nonrenewable resources, including but not limited to, recreation, range, timber, minerals, watershed, wildlife and fish, and natural scenic, scientific, and historical values; and harmonious and coordinated management of the various resources without permanent impairment of the productivity of the land and the quality of the environment with relative consideration being given to the relative values of the resources and not necessarily to the combination of uses that will give the greatest return or the greatest unit output."

NATIONAL REGISTER OF HISTORIC PLACES. A list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, and culture.

NATIVE AMERICAN RESPECTED PLACE. A term used by Eastern Shoshone representatives to describe places that are of interest to individual tribal members and should be respected. The term encompasses a wide range of features including stone cairns, alignments such as Medicine Wheels, rock art sites, and sometimes much less complex features such as small piles of rocks. For some Shoshone, the term would apply to any place with evidence of ancient habitation. Sometimes a "respected place" may indicate where a Native American, at some time in the distant past, made a prayer or an offering, or it may mark the location of a significant event in this individual's life. Respected places are not always significant to the entire tribe; however, upon seeing the feature, tribal members would "respect" the place because it was important to the individual who created it. Respected places often would not qualify as sacred sites or traditional cultural properties, although at times they may meet the regulatory definitions of those property types.

NATURALNESS. In section 2(c) of the Wilderness Act, the wilderness characteristic in which an area "generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."

NON-CONSUMPTIVE RECREATION. Wildlife-associated recreation that is not fishing, hunting, or trapping. Non-harvesting activities, such as feeding, photographing, and observing fish and other wildlife, picnicking, camping, etc., are non-consumptive wildlife activities.

NON-FUNCTIONAL. Describes riparian-wetland areas that clearly are not providing adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high flows and thus are not reducing erosion, improving water quality, etc., as listed under Proper Functioning Condition.

NO SURFACE OCCUPANCY (NSO). A designation for an area where no surface disturbing activities or surface disturbance, of any nature or for any purpose, will be allowed.

NOTICE TO LESSEES (NTL). A written order issued by the authorized officer to implement regulations and operating orders. It serves as instructions on specific item(s) of importance within a state, district, or area.

OCCUPIED HABITAT. Habitat that has a species present at some time of the year. This can include yearlong habitat, winter ranges, and movement corridors.

OCCUPIED LEK. A lek that has been active during at least one strutting season within the last 10 years.

OCCUPIED RAPTOR NESTING SITE. An area of high topographic relief that contains raptors or raptor eggs or on which nest building is actively occurring.

OCCUPIED SAGE-GROUSE LEK. A lek that has been active during at least one strutting season within the last 10 years.

OFF-HIGHWAY VEHICLE. Any motorized vehicle capable of, or designated for, travel on or immediately over land, water, or other natural terrain, excluding: (1) any non-amphibious registered motorboat; (2) any military, fire, emergency, or law enforcement vehicle while being used for emergency purposes; (3) any vehicle whose use is expressly authorized by the authorized officer, or otherwise officially approved; (4) vehicles in official use; and (5) any combat or combat support vehicle when used in times of national defense emergencies (43 CFR 8340.0-5(a)).

OFF-HIGHWAY VEHICLE MANAGEMENT DESIGNATIONS. Designations applied to all off-road vehicles regardless of the purposes for which they are being used. Emergency vehicles are excluded. The OHV designation definitions have been developed in cooperation with representatives of the U.S. Forest Service, U.S. Park Service, and BLM state and district personnel. BLM recognizes the differences between off-highway vehicles and over-the-snow vehicles in terms of use and impact. Therefore, travel by over-the-snow vehicles will be permitted off existing routes and in all open or limited areas (unless otherwise specifically limited or closed to over-the-snow vehicles) if they are operated in a responsible manner without damaging the vegetation or harming wildlife. Designations include—

Closed: Designation for areas in which vehicle travel is prohibited. Access by means other than motorized vehicle is permitted.

Open: Designation permitting vehicle travel in the area (both on and off roads) if the vehicle is operated responsibly in a manner not causing, or unlikely to cause significant, undue damage to or disturbance of the soil, wildlife, wildlife habitat, improvements, cultural, or vegetative resources or other authorized uses of the public lands.

Limited:

a. Designation permitting vehicle travel only on existing roads and vehicle routes that were in existence prior to the date of designation in the *Federal Register*. Vehicle travel off of existing vehicle routes is permitted only to accomplish necessary tasks and only if such travel does not result in resource damage. Random travel from existing vehicle routes is not allowed. Creation of new routes or extensions and/or widening of existing routes is not allowed without prior written agency approval.

b. Vehicle travel is permitted only on roads and vehicle routes designated by BLM. In areas where final designation has not been completed, vehicle travel is limited to existing roads and vehicle routes as described above. Designations are posted as follows:

1. Vehicle route is open to vehicular travel.

2. Vehicle route is closed to vehicular travel.

c. Vehicle travel is limited by number or type of vehicle. Designations are posted as follows:

1. Vehicle route limited to four-wheel drive vehicles only.

2. Vehicle route is limited to motorbikes only.

3. Area is closed to over-the-snow vehicles.

d. Vehicle travel is limited to licensed or permitted use.

e. Vehicle travel is limited to time or season of use. Posted as follows:

Seasonal closure to all motor vehicles (the approximate dates of closure are indicated).

f. Where specialized restrictions are necessary to meet resources management objectives, other limitations may also be developed. Posted as follows:

Recreational OHV play areas.

PALEOSOL. A term used by archeologists and some geologists to refer to an ancient soil deposit. Paleosols are particularly important because they often contain evidence about some of the earliest cultures to inhabit North America.

PERENNIAL STREAM. A stream that flows continuously. Perennial streams are generally associated with a water table in the localities through which they flow.

PERMANENT FACILITY. Any structure that exists on location for 1 year or more.

PERMITTED USE. The forage allocated by, or under the guidance of, an applicable land use plan for livestock grazing in an allotment under a permit or lease and is expressed in AUMs.

POTENTIAL HABITAT. An area that displays similar environmental characteristics (such as elevation, soil type, precipitation, associated species, slope and aspect) as the known habitat of the subject species.

PRECIPITATION. Any or all forms of water particles, liquid or solid, that fall from the atmosphere and reach the ground.

PRESCRIBED BURNING. Controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions that allow the fire to be confined to a predetermined area and at the same time to produce the fire line intensity and rate of spread required to attain planned resource management objectives.

PRESCRIBED FIRE. A fire burning within prescription, resulting from planned or unplanned ignition.

PRESCRIPTION. Written statement defining objectives to be attained as well as temperature, humidity, wind direction and wind speed, fuel moisture content, and soil moisture under which a fire will be allowed to burn, generally expressed as acceptable ranges of the various indices, and the limit of the geographic area to be covered.

PROPER FUNCTIONING CONDITION. A designation describing riparian-wetland areas that contain adequate vegetation, landform, or large woody debris to dissipate stream energy associated with high water flows, thereby reducing erosion and improving water quality; filter sediment, capture bedload, and aid floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize stream banks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration, and temperature necessary for fish production, waterfowl breeding, and other uses; and support greater biodiversity. The functioning condition of riparian-wetland areas is a result of interaction among geology, soil, water, and vegetation. See also Functional-At Risk, Nonfunctional. (Prichard, et al., 1993)

PUBLIC LAND. Land administered by the Bureau of Land Management.

RANGELAND IMPROVEMENTS. Any activity or program on or relating to rangelands that is designed to improve forage production, change vegetation composition, control patterns of use, provide water, stabilize soil and water conditions, and enhance habitat for livestock, wildlife, and wild horses and burros. Rangeland improvements include land treatments (e.g., chaining, seeding, burning, etc.), stockwater developments, fences, and trails.

RANGE READINESS. Stage of plant development at which grazing may begin in an area, pasture, or allotment without damage to vegetation or soil.

RAPTOR. A bird of prey, such as an eagle, hawk, or owl.

RARE SPECIES. Wildlife species whose populations are consistently small and widely dispersed, or whose ranges are restricted to a few localities, such that any appreciable reduction in numbers, habitat availability, or habitat condition might lead toward extinction.

RECHARGE AREA. The surface area where water enters an aquifer to recharge the water-bearing strata in a groundwater system.

RECLAMATION. The reconstruction of disturbed sites by returning the land to a condition approximate or equal to that which existed prior to disturbance, or to a stable and productive condition compatible with the land use plan. The immediate goal of reclamation is to stabilize disturbed areas and protect both disturbed and adjacent undisturbed areas from unnecessary degradation.

RECREATION VISITOR DAY. Any recreational activity taking place within a 24-hour period, or portion thereof, for each individual recreating on public lands.

RESTRICTED CONTROL AREA. Public land areas where control activities may be planned for the designated control period, but control authorization may be limited to certain methods or times of the year. Restrictions placed on control are for multiple-use considerations, including, but not limited to, safety of humans and their pets; wilderness study areas; bird hunting areas; dog sledding areas; or other sites frequented by dogs; protection of threatened or endangered wildlife; unique recreation values; and avoidance of repetitive disturbance of wintering big game herds, wintering bald eagles, and raptor nesting concentration areas.

RIPARIAN. Situated on or pertaining to the bank of a river, stream, spring, or other body of water. Normally used to refer to the plants of all types that grow rooted in the water table or streams, ponds, springs, etc.

SACRED SITE. A specific, discrete, narrowly delineated location on federal land that has been identified by an Indian tribe, or by an appropriate representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion. An Indian tribe or religious authority must inform the federal agency of the existence of the site in order for protections to be afforded to the location (from the American Indian Religious Freedom Act and Executive Order 13007).

SALABLE MINERALS. Minerals that may be sold under the Material Sale Act of 1947, as amended. Included are common varieties of sand, stone, gravel, and clay.

SALINITY. The concentration of dissolved salts in water. It is used to indicate the existence of saline soils. The electrical conductivity (EC) of a saturated extract is the standard measure of salinity and is expressed as mmhos/om. Classes of salinity and their electrical conductivity level: non-saline—less than 2; very slightly saline—2–4; slightly saline—4–8; moderately saline—8–16; strongly saline—greater than 16.

SEASONAL UTILIZATION. The amount of utilization that occurs within a growing season.

SEASON-LONG USE. Grazing throughout the growing period, with little or no effort to control the amount of distribution of livestock use in area/pasture/allotments; also referred to as passive, continuous grazing.

SECTION 106 CONSULTATION. Also known as the 36 CFR 800 process. Discussions between a federal agency official and the Advisory Council on Historic Preservation, State Historic Preservation Officer, and other interested parties concerning historic properties that could be affected by a specific undertaking. Section 106 is the portion of the National Historic Preservation Act that outlines the procedure. The procedure is codified in 36 CFR 800.

SEEDLINGS. A tree grown from seed that has not reached a height of 3 feet or a diameter of 2 inches.

SENSITIVE RESOURCES. Sensitive resources for the JMH CAP planning area are as follows:

1. Wilderness Study Areas
2. Active (unstabilized) sand dunes
3. Slopes > 20 percent
4. ACEC values (visual, recreation opportunities, health and safety, cultural/historical)
5. Integrity of core area wildlife habitat (limiting fragmentation)
6. Key habitat (unique vegetation and plant communities)
7. Key habitat (e.g., escape cover, parturition areas)
8. Cultural/Native American respected places, historical values
9. Connectivity Area

10. Inaccessible areas (overlapping resource concerns, i.e., 1–8 above)
11. Special status plant species
12. Stabilized dunes
13. Visual values (VRM Class II areas).

SERAL STAGE. The relatively transitory communities that develop under plant succession generally described as early, mid, and late seral stages. The mix of seral or successional stages on the landscape can be the result of disturbances, topography and soil, climate, uses of the land, management prescriptions, vegetation classification categories, and evaluation procedures.

SOLID WASTE. Any solid, liquid, or contained gaseous material that is no longer used and is either disposed of, incinerated, recycled, or stored until needed again. Excluded from this definition of solid wastes (by 40 CFR 261.2) are: a) domestic sewage, b) industrial wastewater discharges from point sources, c) irrigation return flow, and d) in-situ mining materials.

SPECIAL MANAGEMENT AREAS. An area containing one or a combination of unique resources or values that receive more intensive management (e.g., ACECs, Special Recreation Management Areas, Wild & Scenic Rivers, etc.).

SPECIAL RECREATION MANAGEMENT AREA. BLM administrative units established to direct recreation program priorities, including the allocation of funding and personnel, to those public lands where a commitment has been made to provide specific recreation activity and experience opportunities on a sustained yield basis. This includes a long-term commitment to manage the physical, social, and managerial settings to sustain these activity and experience opportunities. Delineation is based on administrative/management criteria including the existence of congressional designations, similar or interdependent recreation values, homogenous or interrelated recreation uses, land tenure and use patterns, transportation systems, administrative efficiency, intensity of use, high resource values, public concerns, or interagency considerations. These areas usually require a high level of recreation investment and/or management. They include recreation sites, but recreation sites alone do not constitute a special recreation management area.

SPECIAL STATUS SPECIES. Wildlife and plant species either federally listed or proposed for listing as endangered, threatened, or candidate; state-listed or BLM-determined priority species.

STABILIZED DUNE. A sand dune protected from wind action by a cover of vegetation.

STIPULATION. A restriction placed on an oil and gas lease or other use authorization to protect other resources (e.g., a seasonal restriction to protect big game in their winter range or in their calving areas). The restriction precludes or restricts activities.

SURFACE DISTURBANCE. Describes any action created through mechanized or mechanical means that would cause soil mixing or result in alteration or removal of soil or vegetation and expose the mineral soil to erosive processes. Used in the literal context of actual, physical disturbance and movement or removal of the land surface and vegetation. Examples of surface disturbance include construction of well pads, pits, reservoirs, pipelines, and facilities (parking lot, tanks).

SUSTAINED YIELD. The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the public lands consistent with multiple use.

THREATENED AND ENDANGERED SPECIES. As defined by the Endangered Species Act of 1973 as amended (P.L. 93-205; 87 Stat. 884), an endangered species means "any species which is in danger of extinction throughout all or a significant portion of its range" and a threatened species means "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." Whether a species is threatened or endangered is determined by the following factors: (1) present or threatened destruction, modification, or curtailment of its habitat or range; (2) over utilization for commercial, sporting, scientific, or educational purposes; (3) disease or predation; (4) inadequacy of existing regulatory mechanisms; or (5) other natural or human-made factors.

TRADITIONAL CULTURAL PROPERTY. A category of historic property within the regulations implementing the National Historic Preservation Act. A place associated with cultural practices or beliefs of a living community that is rooted in that community's history and is important in maintaining the continuing cultural identity of the community (from USDI, 1998C). Continuity of use of the place is implicit in the regulations.

TREAD LIGHTLY! A land-use ethics program that encourages individuals and groups to minimize their direct impact on an area.

TRONA. A naturally occurring sodium sesquicarbonate that was formed in ancient saline lakes. It is generally honey or light brown in color, depending upon the impurities present. It is the major natural source of soda ash.

UNDETERMINED LEK. Any lek that has not been documented as being active in the last 10 years but does not have sufficient documentation to be designated historical.

UNKNOWN LEK. Leks that have not been documented either active or inactive during the course of a strutting season.

UTILIZATION. The portion of forage that has been consumed (or destroyed) by livestock, wild horses, wildlife, and insects during a specified period. The term is also used to refer to the pattern of such use (43 CFR 4100.0-5).

VEGETATION TREATMENTS. Land treatment projects designed to improve the growth of more desirable plant species. Biological, chemical, or mechanical methods of vegetation removal, including prescribed burns, are used.

VISUAL RESOURCE MANAGEMENT (VRM) CLASS. The following are the definitions of the four VRM classes:

Class I. The objective of this class is to maintain a landscape setting that appears unaltered by humans. It is applied to wilderness areas, some natural areas, wild portions of the wild and scenic rivers, and other similar situations where management activities are to be restricted.

Class II. The objective of this class is to design proposed alterations in a manner that retains the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

Class III. The objective of this class is to design proposed alterations in a manner that partially retains the existing character of the landscape. Contrasts to the basic elements (form, line, color, and texture) caused by management activity may be evident and begin to attract attention in the characteristic landscape. However, the changes should remain subordinate to the existing characteristic landscape. Structures located in the foreground distance zone (0–1/2 mile) often create a contrast that exceeds the VRM class, even when designed to harmonize and blend with the characteristic landscape. This may be especially true when a distinctive architectural motif or style is designed. Approval by the Field Manager is required on a case-by-case basis to determine whether the structure(s) meet the acceptable VRM class standards, and if not, whether they add acceptable visual variety to the landscape.

Class IV. The objective of this class is to provide for management activities that require major modification of the existing character of the landscape. Contrasts may attract attention and be a dominant feature of the landscape in terms of scale; however, the change should repeat the basic elements (form, line, color, and texture) inherent in the characteristic landscape. Structures located in the foreground distance zone (0–1/2 mile) often create a contrast that exceeds the VRM class, even when designed to harmonize and blend with the characteristic landscape. This may be especially true when a distinctive architectural motif or style is designed. Approval by the Field Manager is required on a case-by-case basis to determine whether the structure(s) meet the acceptable VRM class standards, and if not, whether they add acceptable visual variety to the landscape.

WAIVER. A permanent exemption from a lease stipulation for the entire leasehold.

WATERSHED. All land and water within the confines of a drainage divide.

WETLAND. Lands where at least periodic inundation or saturation with water (either from the surface or subsurface) is the dominant factor determining the nature of soil development and the types of plant and animal communities living there. These include the entire zones associated with streams, lakes, ponds, springs, canals, seeps, wet meadows, and some aspen stands. Wetlands support all fish. They also support more species of wildlife (in higher densities) than any other habitat type in the planning area. They comprise less than 1 percent of the public land acreage.

Wetlands are lands that are transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this document, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes, (2) the substrate is predominantly undrained hydric soil, and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.

WILDERNESS STUDY AREA (WSA). Areas under study for possible inclusion as a Wilderness Area in the National Wilderness Preservation System.

WILDFIRE. Any fire occurring on wild land that neither meets management objectives nor occurs within a prescribed fire area, thus requiring a suppression response.

WILDLAND URBAN INTERFACE (WUI). Location where human structures meet or intermix with wildland vegetation.

WITHDRAWAL. Removal or withholding of public lands, by statute or Secretarial order, from operation of some or all of the public land laws. A mineral withdrawal includes public lands potentially valuable for leasable minerals, precluding the disposal of the lands except with a mineral reservation clause unless the lands are found not to contain a valuable deposit of minerals. A mineral withdrawal is the closing of an area to mineral location and development activities.

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